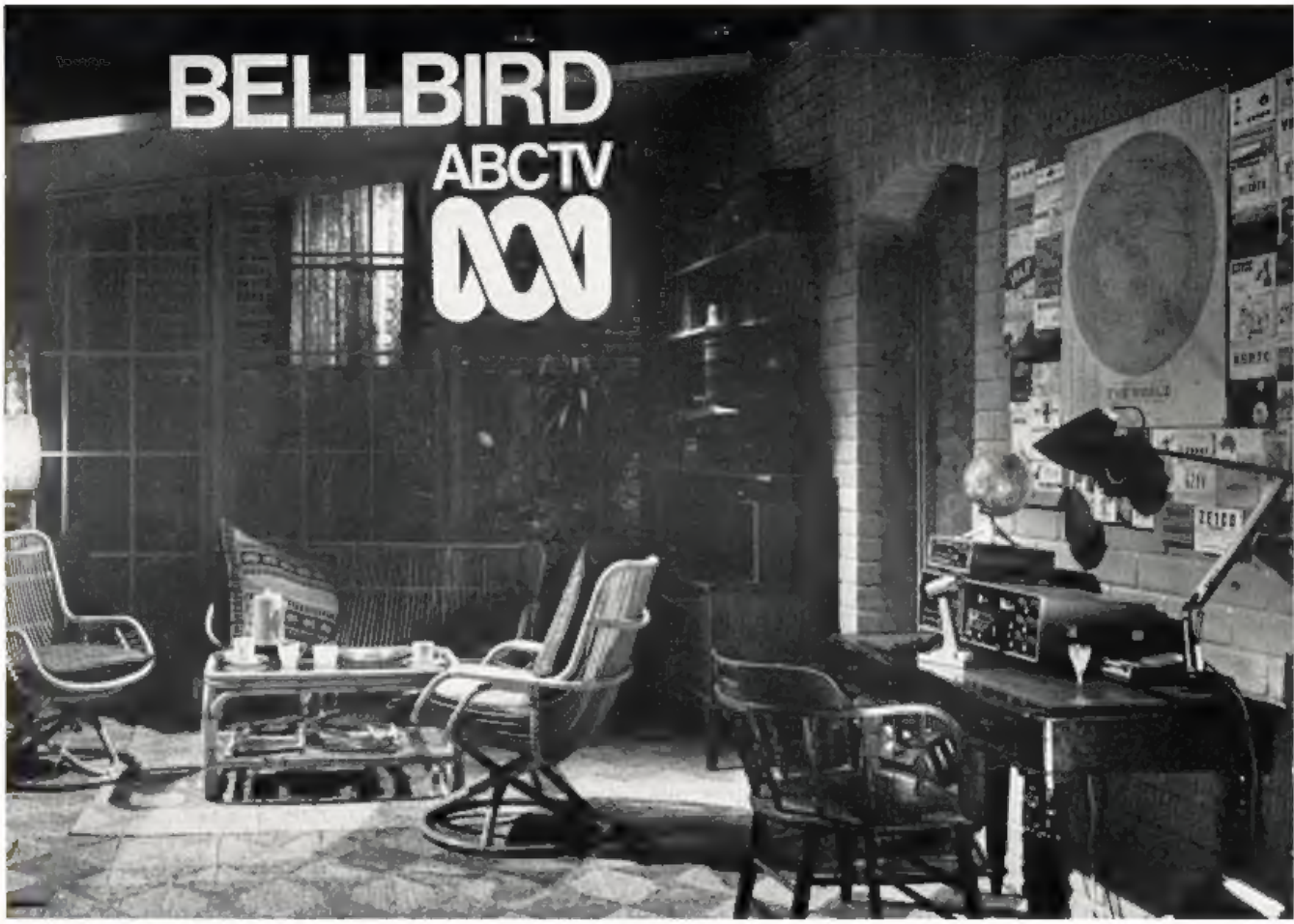
amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



VOL. 46, No. 2 FEBRUARY 1978

CONTENTS

COVER PHOTO

Amateur Radio goes SSB on ABC TV national, and came to "Bellbird" after 10 years of transmission. Laurence Blakely — played by Bruce Kerr, portrayed an amateur (VK3BXT) in "Bellbird" during a search for a child calling for help on a radio. Laurence's study and amateur station featured in four episodes. Bellbird production ceased transmission on ABC TV before Christmas.

Photo courtesy Robin VK3BCL

amateur radio

Published monthly as its official journal by the Wireless Institute of Australia, founded 1910.

FEBRUARY 1978

Vol. 46, No. 2

PRICE: 90 CENTS

(Sent free and post paid to all members)

Registered Office:
2/517 Toorak Road,
Toorak, Victoria, 3142.

Registered at the G.P.O. Melbourne for transmission by Post as a Periodical — Category "B".

Enquiries and material to:
The Editor,
PO Box 2611W, GPO Melb., 3001

Copy is required by the **third of each month.** Acknowledgement may not be made unless specially requested. All important items should be sent by certified mail. The editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying a reason.

Advertising: Material should be sent direct to **P.O. Box 150, Toorak, Vic., 3142,** by the **25th of the second month preceding publication. Phone: (03) 24 6652.**—Hamads should be sent direct to **P.O. Box 150, Toorak, Vic., 3142,** by the **3rd of the month preceding publication.**

Trade Practices Act: It is impossible for us to ensure that advertisements submitted for publication comply with the Trade Practices Act 1974. Therefore advertisers and advertising agents will appreciate the absolute need for themselves to ensure that the provisions of the Act are complied with strictly. Readers are reminded that, when buying, obtaining or receiving goods from overseas including goods listed in advertisements by overseas organisations in this Journal, Customs import duties and Sales Tax may be levied on the goods at the time of importation. These amounts, if any, are payable by the purchaser unless the terms of sale state otherwise and the seller has made specific provision to this effect in his quotation to the buyer or unless other prior arrangements are in force between the buyer and the seller.

Printers: EQUITY PRESS PTY. LTD.
50-52 Islington Street, Collingwood, 3066
Tel.: 41-5054, 41-5055

QSP —

MEMBERSHIP IS YOUR ALLY

This is the time of year when an indication can be had of our financial strength for the coming year.

The response to subscription payments has been well up to standard.

Thank you on behalf of amateur radio, the Institute, and of all your fellow members.

All of us on the Executive are appreciative. Not for ourselves, since we are no more than your servants to safeguard the future of your hobby along with all our friends overseas.

We, that is you and I, face formidable forces to preserve our leisure activity. Not only at WARC 79 but against the gathering strength of other activities.

This Institute is the mouth-piece of amateur radio in Australia. To be of greatest usefulness it has to be strong. That strength is primarily in numbers, secondarily in unity and self discipline under the most provocative circumstances.

If amateur radio is to continue as the worthwhile leisure activity of civilised people your support and assistance are essential through thick and thin.

If you do not believe me, keep this to be read in ten years' time.

D. A. WARDLAW VK3ADW
Federal President. ■

WIRELESS INSTITUTE OF AUSTRALIA

Federal President: Dr. D. A. Wardlaw VK3ADW

Federal Council:
VK1 Brig. R. K. Roseblade VK1QJ
VK2 Mr. T. I. Mills VK2ZTM
VK3 Mr. J. Payne VK3AED
VK4 Mr. N. F. Wilson VK4NP
VK5 Mr. I. J. Hunt VK5QX
VK6 Mr. N. R. Penfold VK6NE
VK7 Mr. P. D. Frith VK7PF

Staff: Mr. P. B. Dodd VK3CIF, Secretary.
Part-time: Col. C. W. Parry, Mrs. J. M. Seddon and Mr. T. Cook (AR advertising).

Executive Office: P.O. Box 150, Toorak, Vic., 3142. 2/517 Toorak Rd., Toorak, Ph. (03) 24 6652.

Divisional information (all broadcasts are on Sundays unless otherwise stated):

ACT:
President — Mr. E. W. Howell VK1TH
Secretary — Mr. D. J. Farquharson VK1ZDF
Broadcasts— 3570 kHz & 146.5 MHz: 10.00Z.

NSW:
President — Mr. T. I. Mills VK2ZTM
Secretary — Mr. I. A. Mackenzie VK2ZIM
Broadcasts— 1825, 3595, 7146 kHz, 28.5, 52.1, 52.525, 144.1, Ch. 8 and other relay stations: 01.00Z. (Also Sunday evenings 09.30Z and Hunter Branch, Mondays 09.30Z on 3570 kHz and ch. 3 and 6).

VIC.:
President — Mr. S. T. Clark VK3ASC
Secretary — Mr. J. A. Adcock VK3ACA
Broadcasts— 1825, 3600, 7135 kHz — also on 6m, 2m SSB and 2m Ch. 2 repeater: 00.30Z (Also on Radio 3HA).

QLD.:
President — Mr. D. T. Laurie VK4DT
Secretary — Mr. P. Brown VK4PJ.
Broadcasts— 1825, 3580, 7146, 14342 kHz: 09.00 EST.

SA:
President — Mr. C. J. Hurst VK5HI
Secretary — Mr. C. M. Pearson VK5PE
Broadcasts— 1820, 3550, 7125, 14175 kHz; 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.

WA:
President — Mr. R. Greenaway VK6DA
Secretary — Mr. N. R. Penfold VK6NE
Broadcasts— 3600, 7080, 14100, 14175 kHz, 52.656 and 2m (Ch. 2): 01.30Z.

TAS.:
President — Mr. R. K. Emmett VK7KK
Secretary — Mr. H. E. Hewens VK7HE
Broadcasts— 3570, 7130 kHz: 09.30 EST.

NT:
President — Mr. Doug Haig VK8JD.
Secretary — Mr. Henry Anderson VK8HA.
Broadcasts— Relay of VK5WI on 3.55 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal information:
VK1 — P.O. Box 1173, Canberra, 2601
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs (10.00-14.00h).
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Sat 10.00-12.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — HQ at West Thebarton Rd., Thebarton (Ph. (08) 254 7442).
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (Incl. with VK5), Darwin AR Club, P.O. Box 1418, Darwin, 5794.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

YAESU

FT-101E

FT101E HF transceiver 160m thru 10m	$859
FL2100B HF linear amplifier	$578
FRG 7 Receiver	$338
FT301D HF solid state transceiver	$1149

KENWOOD

KENWOOD TS-520S transceiver

TS820S HF digital transceiver	$1105
TS520S HF 160-10m transceiver	$705
VFO820 vfo for TS820S	$115
TV502 2m transverter	
TV502 2m transverter	$260
TV506 6m transverter	$229
TR7400 2m fm digital transceiver	$450
MC50 desk mic, dynamic	$54

MORSE KEYS

HK702 deluxe, marble base	$35
HK708 economy model	$18
HK706 operator's model	$20
MK701 manipulator	$38
ED103W electronic keyer	$159

MICROPHONES

VM-1 ptt lowZ, noise cancelling	$8.90
VM-2 base with preamp, low Z	$29.80

L.P. FILTERS

FD30M 32MHz cut-off, 1KWpep max	$35
FD30LS 32MHz cut-off, 200w max	$20

ROTATORS

ART3000C heavy duty with control box	$199
ART8000 super heavy duty	$479
AR22XL light duty for small beams	$119

NOISE BRIDGES

TE7-01 Omega, up to 100MHz	$40
TE7-02 Omega, up to 300MHz	$55

BALUNS

AS-BL(Asahi) for beams	$31
BN86 (HyGain) for beams	$30
BL50A (Rak) 50 ohm, 4Kw, dipole	$25
BL70A (RAK) 70 ohm, 4Kw, dipole	$26

couplers

CL65 500w, 2.5 thru 20MHz	$134
CL99 200w, 2 metres	$61
CSW216 incl swr/pwr meter, 3.5-28MHz	$219

$849 uniden

The fabulous Uniden 2020 phase-locked-loop transceiver offers separate usb/lsb/cw 8-pole crystal filters as standard and 6146B's in the final with screen voltage stabilisation for minimum distortion products. Features plug-in pcb's and even the front panel can be swung out for easy servicing. A full spares catalogue is available together with change-over pcb's. Compare the Uniden 2020 with other HF transceivers and you'll be quickly convinced that it offers the best value!

SPEECH PROCESSORS

MC330 audio mic compressor, ac/dc	$71
RF550 rf speech processor	$112
RF440 rf speech processor	$149

DAIWA

ATLAS

ATLAS 350XL s/state base stn.	$1199
ATLAS 350PS matching AC supply	$ 285
ATLAS 210X 80 thru 10m	$ 969
ATLAS 215X 160 thru 15m	$ 969

RECEIVER

The NRD-505 professional receiver covers 100KHz thru 30MHz with digital display, CMOS memory, high stability all-mode operation. Price $2499.

WARNING: The law requires that a licence be held for all transmitting equipment. Purchasers may be asked to provide evidence that he/she is the holder of an appropriate certificate of proficiency.

Prices and specifications subject to change without notice.

Direction: Russell J. Kelly
Peter D. Williams

HELLO 6M DX

Sunspot cycle #21 in now on the up-and-up! Share in some of the fun on 6 metres DX with the **ICOM IC502** ssb portable transceiver. The IC502 covers 52-53MHz with VFO control, RIT, effective noiser blanker, provision for external power and antenna and comes complete with carrystrap, mic and English handbook. Backed by **VICOM** 90 day warranty. Price $219

ICOM

IDEAL FOR SATELLITE WORKING

The **IC202** is the ideal 2m exciter for those long-haul DX contacts or to work oscar. 3watts ssb and cw, VXO control, quality manufacture and comes complete with manual, carry-strap, mic and VICOM 90 day warranty. Price $219

ICOM IC-215 2m FM transceiver $219

• 2 meter FM • 3 W PEP • 15 channels, 12 by selector, 3 by function switch • Dual power level, 3 W HI for long distance, 0.5 W LOW for local • Dial illumination for night use • Power pilot lamp • Frequency range: 146 to 148 MHz.

ACCESSORIES FOR THE PORTABLES

BC-20 nicad pack and reg.	$57
Rubber Ducky 2m antennas	$13
Mobile mounting bracket	$18
IC3PS matching power supply	$115
IC20L 2m linear, 10w out	$98
IC50L 2m linear, 10w out	$90

Sunspot cycle 21 coming up....

PORTABLES

Antennas!

You know you can count on

hy-gain

TH6DXX 6el 10/15/20m Thunderbird	$320
TH3MK3 3el tribander 8dB gain	$249
TH3Jr 3el tribander, 12' boom	$199

TRAP VERTICALS

V5Jr 6.7m high, 80 thru 10m, no guys	$109
V4Jr 4.25m high, 40 thru 10m, no guys	$89

TRAP DIPOLES

MidyVN 80 thru 10m	$67
AL48DXN 40 & 80 metres, 2Kw	$54

TWO METRES

ringo $49

The RINGO RANGER ARX-2 is a 2M gain omni-directional antenna with three half-waves in phase and a one-eight wave matching stub. The Ringo Ranger gives an extremely low angle of radiation for better signal coverage. It is tunable over a broad frequency range and perfectly matched to 52 ohm coax. Price $49.

4dB gain with reference to half-wave dipole.
6dB gain with reference to quarter-wave whip.

Price $279

ICOM IC-22S FM transceiver

IC-211
4 MEG, MULTI-MODE

ICOM IC211 2m fm transceiver
The new IC211 from VICOM is the last word in digital 2m, all-mode transceivers. Fully synthesised in 100Hz or 5KHz steps, has dual tracking, optically coupled VFOs with 7 digit LED readout. One knob controls all frequencies. Modes fm, usb, lsb, cw. Internal 240vac and 13.8vdc power supply. Comes complete with VICOM 90 day warranty. List price $785 plus freight and insurance.

ICOM'S DIGITAL ALL SOLID STATE
HF TRANSCEIVER

THE WORLD LEADERS IN VHF NOW BRING YOU THE ULTIMATE

IC701

- All Solid State, even the finals.
- 100W Continuous Duty on All Bands, All Modes.
- All Bands 1.8 ~ 30MHz.
- USB, LSB CW, CW-N(Narrow), RTTY.
- Double Balanced Schottky Diode Mixer used in both receive/transmit.
- Dual built-in individual Digital VFO's offer split frequency operation.
- ICOM's unique Pass Band Tune.
- VOX, Semi-break-in CW, RIT, AGC, Noise Blanker.
- Built-in Speech Processor.
- Full Metering.
- Extremely compact.
- Digital readout and all filters built-in.
- Built-in DC power supply.
- Optional AC power supply/speaker.
- Full line of accessories to come.

ICOM

IC701 TRANSCEIVER $1160
IC701PS optional AC supply $239

VICOM

Head Office and Mail Orders:
139 AUBURN ROAD, AUBURN, Vic.
Telephone: (03) 82.5398, (03) 813.2355
TLX 30566
Adelaide: 43.7981 Brisbane: 38 4480
Canberra: 82.3581 Gold Coast: 32.2644
Perth: 446.3232

WIANEWS

INSERTS

Possibly the impending holiday season may have taken the minds of contractors off their work. Anyway, things occurred which were outside the control of the Institute and which only came to light too late for corrective actions to be taken.

In December AR you received only one of the two printed pages from the Executive — the one with the petition. After that issue had been mailed you can imagine the comments when the mailing service returned the entire stock of the second leaflet with the overs; in the unopened packages still carefully marked leaflet "A". This leaflet finally was included with the January issue of AR.

At about the same time complaints came in from Melbournites that they received a VK2 insert with their AR. Fortunately the stencil for this insert was still on hand so another run was produced for insertion into the January issue for NSW members.

Yes, quotes from other mailing services are being sought.

EDP

The subscription notices were produced from the computer file early in December.

Not only did this run use up the entire stock of subscriptions stationery because of a programme omission dating back to last april, but also the run was accidentally made on last year's subs. rates. The file has now been properly up-dated but where there were increases in rates the relative subs. notices had to be altered by hand.

Having completed these 2000 odd alterations, believe it or not, it was discovered that some small isolated batches of Final Notices had been sorted into the ordinary sets. By this time most of the notices had already been posted. Fortunately the quantities were small but annoying to the recipients, "How come I get a Final Notice without even receiving any earlier notice?" The fact that the trimmed notices received from the computer centre were trimmed too large to fit the envelopes (sample supplied of course) also did nothing to facilitate quick handling — a friendly local printer guillotined them so size.

Never a dull moment, but apologies though these things happened through no fault of your office.

Sadly other things like the power strike and an AR staplers' unscheduled close down between Christmas and New Year caused delays in processing ARs.

EXAMS AND EDUCATION

No representative from the Radio Frequency Management Branch ttended the Federal Education Co-ordinator's meeting on 7th December in Melbourne for interstate and local WIA experts. Sickness and pre-occupation with a State Radio Superindendants' testing on the same day were given for the omission.

Nevertheless the Co-ordinators' meeting produced a number of useful recommendations considered and discussed by Executive at the December meeting. Members will have noted the submissions made to the P. and T. Department as published in September AR.

One evening very late in December, Peter Wolfenden, the Executive Vice-Chairman, was entertained by Kaklum Lumenta YBOBY, on the latter's return to Jakarta from a short holiday in Adelaide. Kakium is a Vice-President of the Indonesian amateur society ORARI and described in detail how their society organises, sets, holds and marks examinations on behalf of their licensing authority. Much more elaborate and in greater depth than occurs in the USA for their Novice level.

RON WILKINSON ACHIEVEMENT AWARD

The Executive Sub-Committee's recommendations were accepted by Executive and subsequently were found satisfactory by Mrs. Wilkinson herself. Details were circulated to Divisions. If no further suggestions come forward the full details will appear in March AR. Also to be announced will be the names of the 1977 recipients. This award should excite the interest of anyone wanting to achieve something in his chosen hobby of amateur radio.

WARC 79

Yes, WARC 79 is now next year with basic preparations by Governments to be readied for CCIR discussions later this year. The Federal President and Michael Owen VK3KI, one of the IARU R3 Directors, held discussions with NZART officers late during November in New Zealand.

WIA LOGO, POSTERS, STICKERS

Work is continuing on the production of a suitable logo or badge for modern day use. This would not necessarily replace the existing badge, as this is a matter for decision by Federal Council. Meantime some draft posters have been viewed but cannot be finalised yet. The intention is to produce sets of publicity material for use in show stands or displays. If any member believes he can produce designs please send them in to Toorak — much help is needed on this project.

1978 FEDERAL CONVENTION

A reminder that agenda items for this year's Federal Convention are required to be received during March. If any member has anything to put forward, please submit it now direct to your Division without delay. ■

QSP

IMPROVE YOUR STATUS

"Never say or write 73 (best regards); always say 73's (bestes regardses).

Never say 88 (love and kisses); always say 88's (loves and kisseses).

Never say "I" referring to yourself; always use the Imperial "We". Someone may come back to you addressing you as Your Majesty — just think how this would puff your ego.

Always call your wife "the XYL"; that let's the world know you regard her as no longer young and no longer a lady.

Adapted from CORA August 1977. And fail not to end a QSO with "over and out didahdidahdit 10-37 good buddy".

NEW MEMBERS SUBSCRIPTIONS

When you first join as a new member you normally pay the appropriate subscription for one year. Thus, if you join (in actuality when your AR begins) for July AR your subscription takes you through to June of the next year inclusive. In that next year you will receive a subscription notice only for the amount required to render you financial through to 31st December of that year. Thereafter your subscription year will run from January to December each year. An impending change in WIA EDP programmes may alter this however as it is hoped to adopt anniversary or cyclic billing for new members. Further details will be published later.

VISIT TO NEW ZEALAND

On November 25th to 27th the Federal President — David Wardlaw VK3ADW — accompanied by IARU Region 3 director Michael Owen VK3KI visited Wellington, New Zealand, to confer with officials of the NZART.

Attending were Arthur Godfrey ZL1HV, President of the NZART, Tom Clarkson ZL2AZ, a director of IARU Region 3, Doug Gorman ZL2IY, Post Office Liaison for NZART, Fred Johnson ZL2AMJ, who assists Tom Clarkson on IARU business, Gerry Kilpatrick ZL1BBS, and Jim Meechan ZL2BHF, Councillors.

Naturally, the most important subject discussed was the preparation for WARC 79.

To date the general preparation in New Zealand for WARC 79 is not quite as advanced as in Australia. It is pleasing to note that the NZART is well involved in the work.

The hope was expressed by the NZART that they will be able to have a member on the New Zealand delegation. Steps are being taken to provide finance.

The opportunity was taken to discuss IARU matters in relation to both the regional and overall organisations.

Also many points on common domestic issues were discussed. Examinations, regulations, legislation, CB, pirates, etc.

Many of the problems which we think are peculiar to Australia are also common on the other side of the Tasman.

In these areas, much useful information was gleaned and will be applied in the Australian context.

The visit was certainly not before time and will help to provide much closer liaison between the NZART and the WIA, a necessity in the critical days leading up to WARC 79.

de VK3ADW

160 METRE MOBILE RALLY

Visitors to the Bendigo Convention on the morning of 26th February will be looking for 160 metre band contacts. If you can work on this band why not come on the air and give the travellers a point or two to add to the score.

de VK3YQ

COMMUNICATIONS SATELLITES

According to Telecommunications Journal Aug. '77 the latest Intelsat TV satellite launched on 26th May carries 6250 two-way telephone circuits and two television channels in the frequency segment 3700-4200 MHz with a power of 20W. The apogee is given as 35755 km in geostationary orbit. The orbital mass was shown as 825 kg.

STOLEN

The following equipment has been stolen: IC215 S/N 7202417. Please report any information to your nearest police station or Vicom International Pty. Limited.

ILLEGAL VHF OPERATIONS IN MAITLAND

Licensed amateurs operating in the near Newcastle area of Maitland should be on the lookout for pirate operations on Ch. 40. The callsigns being used illegally are VK2YBC, VK2ZJY and VK2ZQF. They generally choose local WIA BC times on Monday evenings to try out their toys.

From Westlakes R.C. Newsletter, December, 1977.

RFI

"Extensive electronic controls used in 1977 autos are causing RFI problems — a recent Illinois Bell notice warned that the 'cruise control' in 1977 Cadillacs (and presumably other GM cars) is sensitive to strong RF fields, which could cause sudden speed up or slow down. Some electronic skid control braking systems have locked up from RFI, and complete engine failure in fuel-injected engines has been reported by two-metre users." Ham Radio August 1977.

EDITOR'S DESK

By Bruce Bathols VK3UV

The December 1977 issue of Amateur Radio has received acclaim from many areas and the Publications Committee is pleased with the final result.

Circumstances beyond our control contributed to the lateness of delivery and we regret any inconvenience which may have been caused to our members.

Amateur Radio — Australia's Window on the World, is designed for the information of newcomers, and for the first time in many years, this issue has been made available for sale to the general public through technical book sellers and other retail outlets. Copies of this issue are still available from the WIA, and we request those who would like an additional copy to forward $1.35 plus 40c postage to P.O. Box 150, Toorak, Vic. 3142, to secure same.

Limited bulk supplies are available to clubs, divisions, traders, etc. at special discount rates, and we suggest that initial contact be made with the Federal Secretary, Mr. Dodd, at the above address for bulk supply information.

In our efforts to continually present the current happenings of our hobby to our diverse membership, we strive to publish articles and items of general interest which we consider to have wide appeal. To assist in this regard, it is necessary to collect a backlog of suitable material, and in our case we require material prepared in advance for at least 3 months.

We are always on the look-out for technical articles especially, and photographs — lots of them — to brighten up the pages and the front cover.

Technical articles do take several months to prepare, technical editing, drafting of diagrams, ability to 'slot them in' at a suitable time, sometimes re-writing, all contribute to publication delays — but please don't be put off — keep them rolling in.

At the present time, we are in a very fortunate position in having sufficient technical articles in various stages of preparation to last approx. six months — but more are required.

We have been disappointed in the response to our appeals to divisions via executive notes for a supply of photographs of suitable items of interest.

Have Australian amateurs forgotten how to use a camera? How about dusting off the lens fellers and girls, loading up with some film and start looking around for interesting items such as unusual antennas, shacks, mobile installations, maritime and aero mobile, outdoor amateur scenery, hamfests, community displays, emergencies, etc. etc. — the list can go on and on with a little imagination. — Please don't forget captions and perhaps a short story.

Amateur Radio magazine can only be made interesting if our members help us to make it so.

Please let us have your submissions in the near future — act now before you forget. ■

MELBOURNE AMATEUR 70 cm BAND REPEATER — VK3RAD

Don Sinclair VK3VH
6 Tintern Ave., Springvale South

Glen Percy VK3ZQP
Cotswold Ave., Springvale South

It is a well known fact that Amateur Radio operators are compulsive experimenters, always trying new methods, new components and new techniques in a never ending quest for knowledge and ventures into new fields. It was this experimenting spirit and venture onto the 70cm band that brought about the birth of VK3RAD and this article.

In 1972 an experimental repeater, VK3WIA-R/5, was set up on Mt. Martha by the Australis Group as an aid to the Intended Amateur Satellite Programme. This repeater uses Channel A (2M) 145.854 MHz in and [illegible]15 MHz out in the 70 cm band.

Quite a few amateurs worked through or could listen to this repeater and got the 70 cm bug. That repeater has not been active for many years now, but the amateurs who remembered it went on to establish a net frequency on 435.00 MHz and operated consistently on the frequency until the latter part of 1975. By this time approximately a dozen amateurs using the frequency formed a group and had regular meetings at each others' QTH to discuss the news, new equipment, antennae, etc. At one of these meetings it was suggested the group apply for a permit for an "experimental" repeater in the 70 cm band.

A letter was drafted and sent to the Telecom Radio Branch in April 1976. After a lengthy period and exchange of information a licence was granted for a repeater. The proposed equipment was accepted as it would comply with the technical specifications pertaining to the licence. The repeater was to be located at the QTH of VK3YEO as aerials were already available and access to the repeater was at all times restricted to the licensee. The frequencies selected were 433.525 MHz in and 438.525 MHz out, which complied with the WIA band plan, and are the primary frequencies in the 70 cm band for repeaters. The repeater was to have FSK identification and would incorporate a two minute timer. The call sign issued was VK3RAD. The power delivered to the antenna was not to exceed 25 watts.

At this point an elated group of amateurs proceeded to set up and test the equipment which had — apart from the main repeater unit — been designed and built by members of the group. The main repeater unit was designed around a PYE WESTMINSTER UHF mobile unit and initially ran barefoot, delivering 4 watts. The antenna for the transmitter was a five element co-linear, and for the receiver a UHF ringo was pressed into service. The system worked reasonably well but left much to be desired from a mobile situation. The problem showed two deficiencies in need of attention — more power output and better ears — and/or better antenna systems. An RF amplifier was constructed for the receiver incorporating a 3N210 MOSFET. Also an RF amplifier for the transmitter which delivered 16 watts for the 4 watts from the unit itself was forthcoming, once again designed and constructed by group members.

These additions created a new problem, namely desensitization due to antenna spacing, the increase in receiver sensitivity and the increase in transmitter power. The only solution to the problem was to incorporate a high gain antenna and a diplexer.

After much hunting and cajoling a UHF diplexer was located and obtained. Of course it had to be retuned and tested and many thanks are extended to John VK3ZRV for this task. The diplexer offered 60 dB attenuation in the receive mode to the transmitter. The repeater was now a workable system and gave constant copy from most parts of suburban Melbourne. As mentioned previously, amateurs are never satisfied and an application for a change in operating locality was granted.

The repeater is now located on a high ridge in the eastern suburbs of Melbourne and commands one of the best UHF locations for greater Melbourne. It has in fact been activated from Ballarat.

When this article was compiled, VK3RAD was one month off its first birthday and has enjoyed a failure free existence. Apart from frequency checks and inspection, the repeater has operated 24 hours a day and looks like having a good future.

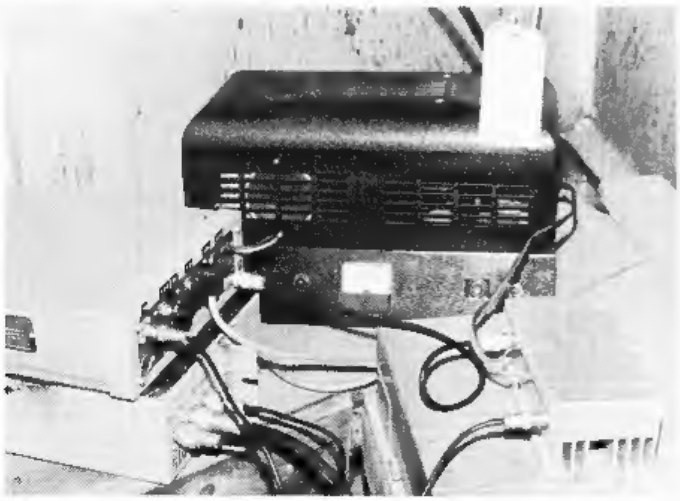
TECHNICAL SPECIFICATIONS

Transmitter: PYE WESTMINSTER with outboard PA (20 watts), giving 16 watts at the aerial port. Deviation 7.5 kHz.

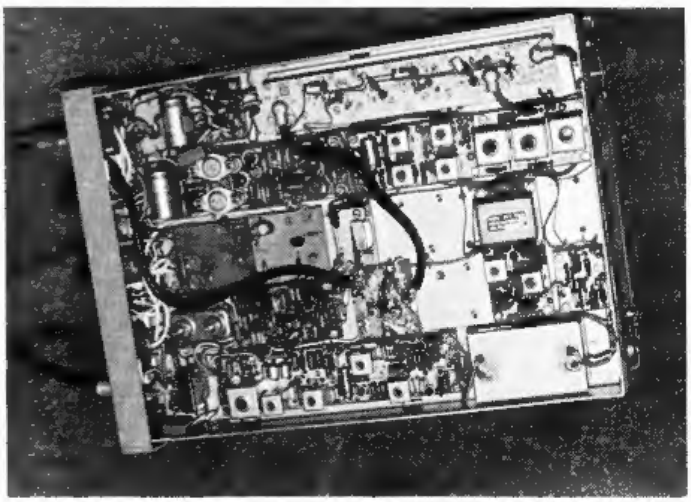
Receiver: Mute sensitivity 0.25 uV. Sensitivity 0.2 uV for 20 dB quieting. 3N210 MOSFET pre-amplifier.

Antenna: UHF "RINGO".

Other relevant information: Call sign — FSK, Time out facility — 2 minutes and automatic identification on restoration. ■



VK3RAD 70 cm Repeater — Power supply at rear, main Westminster repeater unit sitting atop diplexer — 20 watt RF-PA on right.



Inside view of the receiver section of the Westminster repeater.

ON THE ROAD WITH THE UNIDEN 2020

Some notes by Alan Noble VK3BBM
Reprinted from The Radio Bulletin (EMDRC) October 1977.

Every dog has his day and in that respect the owners of all those 101s and all those 520s will no doubt find this as interesting as those to whom it is primarily addressed. Being secretly of fastidious tastes and having that strong desire to own only the best on the market, I naturally equipped my humble shack with the UNIDEN 2020. This was in the good old days when the trade would only sell that sort of gear to licensed AMATEURS (and anyway I had a Limited, didn't I?) and I needed something to listen to the big boys on.

On the occasions of a visiting full licensee the machine would be put through its paces and seemed to perform up to all expectations — except that I did not yet collect all the commissions for the sets which I undoubtedly sold.

Now having mastered the art of copying morse at some very peculiar speed I found myself at last qualified to turn the knobs on my gear under my own steam. And this I did, I might tell you. And I did it mainly at night.

To mark my eventual success I put several 807s out of commission, thus further qualifying as a full amateur, put a quid in my pocket and ventured down to the local amateur hardware store to purchase a bit of prefabricated gear called an external VFO. This was duly connected to the main rig. Of course DX was the only thing to work and I tuned all that beautiful PLL circuitry to roughly 14 MHz, and set myself for many happy hours of DXing. Three months later I had given up going back to other station's calls as the fellows with the big guns and beams obviously were not going to talk to small fry like me. It was very apparent that if you ran a vertical you were on the outer. So a change in tactics was in order and firstly to make sure I was sort of in vogue with my operating practice I tootled down to 3.5 MHz and got in with the short-haul gang. Here I was accepted and found that all who used this band were gentlemen like myself.

Having proved myself on 80, the call of the DX returned and I ventured with some trepidation to that revered sanctuary at 14 megs. And I called CQ and I called it many times but the F layer would not answer.

By this time, as it was the end of another month, I was much distressed with frustration. So much so that I had a vision which said that I should change my call to something exotic like AN4Q2 . . . but I didn't. And it came to pass one evening soon after that, that another gentleman was also on the band (following an arrangement made via 600 ohms) and I called him to test another microphone. He came up and said that I should have another go at tuning up as I was only S1 on his meter. This I reluctantly did as I knew I had got it all together the first time anyway. He then asked me to turn down the mic gain as I was unreadable. Barley Charlie, just who does this guy think he is? But I knew he would not fool me and I also knew he used reasonably good gear (called Collins, I think) so I did as I was told. When I had finally turned the mic gain down to practically zero I was rewarded with a 4-1 report. Not quite the best that has been achieved with 100 watts PEP at 12 miles. Just to keep the story straight I had not introduced the microphone that I wanted to test and was using the standard Uniden mic.

We were operating on 14.115 and I knew that was true because that's what the dial said. Now came the comment that my audio was FMing and that is a facility the UNIDEN does not have, so something is but definitely screwy. Up came the suggestion that I should turn on my counter and check what was going up the spout, and I really took that as a vote of no confidence in my rig. Staggering with hurt pride I turned the counter on, ran some carrier and out of the corner of my eye squinted at the lying readout . . . 14.215. Quite unperturbed (born in Collins operators) he said he would go walkabout up the band and have a look while I tuned again without touching the VFO. Back came the report that I had a beaut carrier on 14.215 but there was no sign of any audio up there. Had my fantastic PPL become a frantic fazed loose hoop?

To cut a long story short, because I believe you are interested only in the facts and you have no time to read untechnical drivel (you can do that any time on an ex-amateur band), we performed a number of isolation tests with the following results:

1. **External VFO CONNECTED to Transceiver and Operation Switch at INTERNAL.**

   (i) segment switch on transceiver at 100 kHz position
   segment switch on external VFO at 100 kHz position
   RESULT — transmission on frequency indicated on main VFO dial; audio FMing.

   (ii) segment switch on transceiver at 100 kHz position
   segment switch on external VFO at 200 kHz position
   RESULT — transmission on frequency 100 kHz higher than indicated on main VFO dial with low power signal on correct frequency; audio FMing.

   (iii) segment switch on transceiver at 100 kHz position
   segment switch on external VFO at 300 kHz position
   RESULT — as in (ii) above except main power now transmitted 200 kHz higher than indicated on main VFO dial.

2. **External VFO CONNECTED to transceiver and Operation switch at EXTERNAL.**
   All transmissions on frequency as indicated by the EXTERNAL VFO dial but audio FMing.

3. **External VFO DISCONNECTED from transceiver and Operation switch at INTERNAL.**
   All transmissions on frequency as indicated by main VFO dial and good audio quality Report 5-9 signal.

And so we had the clue to the problem — transceiver operating OK but when the external VFO was connected it caused the audio to FM and in addition it was taking over frequency control even though the Operation switch was at INTERNAL.

With the kind help of Peter and Duncan at Vicom the trouble was diagnosed and corrected without much agony. The 5 volt line from the transceiver to the external VFO is rather critical. When checked with a high impedance meter this was found to be 4.8 volts and was corrected. In addition the contacts on the plug-in board in the external VFO were cleaned with a spray of common cure-all. It appears that a few extra artificial diodes had been introduced to which all the higher class solid state devices took exception.

A week after carrying out the above tests, I was talking to Dusty VK3AYO who was rather put out about receiving a 5-0-7 report from a VE station. Being a regular brass pounder, Dusty queried the Canadian who said he could not give better than 5-0 as Dusty was not moving his meter. Dusty reckoned he did not give a hang about the 5-0 but what about this 7 business? The report was pronounced chip on Dusty's CW sigs. I told Dusty about my problem and putting two and two together with 7 I suggested we run some tests. These showed similar results to those shown above with chirp apparently caused by the shift in signal frequency. We have found the fault frequency dependent and was not evident on 3.5 MHz (this checks with my phone experience) but was pronounced on 14 MHz and above. Two other differences were also noted — Dusty's external VFO would not start on 7 MHz and also he did not have the problem of the external VFO taking over when on Internal switched position. Dusty no longer sounds like one of those U station washboards.

A few days after re-installing my gear I heard Doug VK3BIE talking about a mysterious distortion on his audio. I was able to tell him about the above and steer him hopefully in the right direction. Hope all is now OK, Doug.

My sincere thanks to Dave VK3DC for his assistance and patience in carrying out the original isolation tests.

Next time someone hears me working split frequency would they please let me know? Happy VFOing. ■

KNOWING TOO MUCH FOR YOUR OWN GOOD!!

From Westlakes Radio Club — Monthly Newsletter, October 1977

"The gear here is home brew and using 14 gold plated 3/32 left-handed framistran screws and running 10 kilowatts into a 6SN7 modulated by a pair of matched 6DQ's . . awk . . arghahhhhhhhhhhhhhh . . ."

Only a dream, it's true, but if I can ever perfect my invention it may really come to pass. Right now all I have is a little black box with a push-button switch on the top. When I am on the receiving end of one of these conversations I reach over and press the little button once or twice, good and hard. Nothing happens of course, but one day. If I can just figure out a way to make some kind of weird horrendous atomic fireball leap from his microphone and down the chaps esophagus I will have contributed to the furtherance of amateur radio immeasurably.

The fault isn't in amateur radio itself — its the system. They ought to ask a few questions in the exams just to see that you are capable of communicating once the contact is established. Knowing how to dip the final is keen, but once the gear is tuned up you're sitting there with a mighty big carrier at your fingertips and nothing worthwhile to do with it. It's like getting a driver's licence, and then realizing that you only know how to drive in a straight line, with a Rolls Royce. Let's face it, it shows no technical prowess, accomplishes nothing for the state of the art of radio, to plug in a rig, connect an antenna, and ragchew with some chap.

OK, so you made the contact — you've also gained some valuable information such as: 1. The household wiring is truly hooked up to the council lightpole. 2. The voltage is approximately 240 volts. 3. The power bill has been paid. 4. The antenna didn't blow down or corrode since the previous contact. 5. Messrs. Kennelly and Heaviside knew what they were talking about. 6. The chap on the other end knows at least as much on amateur radio since he was able to get his junk working too. Like, so what? Once you've confirmed the foregoing things to yourself and the fellow on the other end, there's not much point in boggling the airwaves with insipid equipment rundowns. Do you think that now that he has learned that your fine super signal is coming via your Signalizer Schpritzer Mk. XII (or whatever lies you feel like peddling that day) that he does really give two figs? Quite frankly, many of the signals heard are so feeble and poorly modulated that learning what the chap is using would only serve as a deterrent when one goes out to buy the next bit of equipment. Manufacturers of amateur gear should listen for the idiots with the rotten signals and then pay them to say that they were using a competitor's set.

Fact is, that many amateurs are simply too bashful or uninformed to get a good non-technical conversation going. If two of these chaps hook up on the air it becomes a Mexican standoff, with exchanges of finals, final-finals ad nauseum after the exchange of technical data Each operator tries desperately to figure out a way to unload the creep on the other end without hurting the other chap's feelings or to make one look foolish

The trick, of course, is to cleverly sneak a few subtle remarks into the QSO to let the other chap know that you are also programmed for non-technical style of communications. If he wants to he can pick up the ball and run with it. If he ignores it, then nobody's the wiser and you can go into your Hoges and Strop bit.

"Yeah Sam. I've got to run over to that Diggy's place and pick up a 10K pot."

"Careful Fred. If the fuzz hears you have ordered 10 kilos of pot you've had it."

For the older generation you might try:

"There's a 50 cycle ripple on your signal, OM."

"Yeah. We're getting Frank Ifields up here next week to put a little rhythm into the thing."

A little imagination and you'll find a way You'd better — I'm coming close to perfecting my little black box with the switch on top. Guess that necessity is the mother of retaliation.

For the CW devotees I suggest closing your transmission with a crisp 'Shave and haircut — $2.50" tempo. ■

FROM INCINERATOR TO IN-HABITABLE

Ian Hunt VK5QX
8 Dexter Drive, Salisbury East 5109

The official opening of the South Australian Divisional Headquarters, the "Burley Griffin Building" on April 3rd, 1977, brought to a culmination the efforts of many members of the Division in establishing this centre for Amateur Radio in the State of South Australia. For those who do not know the history of this building, I will provide a brief summary.

This remarkable "edifice", for call it such one may, first saw life as an Incinerator and Bitumen Plant in 1937 Its design as an incinerator was produced by a company specialising in such matters, however the building housing said incinerator was designed by the late Walter Burley Griffin, well known in connection with the design of our National Capital, Canberra. This renowned gentleman certainly had an eye for beauty and structure, as a result of which, after cessation of its use as an incinerator, the building was marked by the National Trust as "not to be destroyed or altered"

This presented the Thebarton Corporation, in whose municipality the building is located, with somewhat of a problem. "What on earth does one do with an incinerator which you cannot demolish?"

Well in time this problem was solved.

The VK5 Division was looking for a suitable building to serve as its headquarters. Contact was made with the Corporation by the Divisional Committee concerned and, after negotiations in which Rob Wilson VK5WA played a major part, it was agreed that the Institute would take a lease upon the property in itself. Suffice to say that many members contributed their skills, from jack-hammer operating through to carpentry, painting, electrical work, concreting, you name it, and in the area of construction it took place. Over a period of three years the work progressed up until late 1975, when the Divisional Council decided the building could be usefully occupied. At first the building was used for the monthly Council meetings, but following closely upon this decision other activities such as the General Meetings and VHF group meetings took place at this new location. The first General Meeting was held in the building on 28th January, 1975.

Working bees were still held and other voluntary work carried out until the time finally arrived when an official opening ceremony was both warranted and desirable. Much debate took place in Council as to the form and nature such a ceremony should take. Suggestions as to who should perform such a ceremony ranged from such as Garry McDonald from Wollongong, through the political sphere to State dignitaries. It was eventually decided with unanimous agreement that the Mayor of Thebarton, Dr Flaherty, M.B., B.S., J.P., should be invited to perform this function Right throughout the period in which the Division carried out all the work leading up to this event the Thebarton Council had shown great interest and encouragement in our plans and had provided much assistance and co-operation. Along with the Mayor and Mrs. Flaherty other members of the Corporation, including the Town Clerk, Mr. Mal Baker, and Mrs. Baker, were invited Of the members of that body the following also found themselves able to attend. Alderman Crafter and Mrs. Crafter, Councillor Carter and Mrs Carter, Councillor Baker and Mrs. Baker, Councillor Poley, the Assistant Town Clerk, Mr. Hanson, and Mrs. Hanson

Also among the official guests were a representative of the National Trust, Mr.

Game, and author, bushman and artist, Mr. Len Beadell, and Mrs. Beadell. Important personages from amongst the Divisional members invited as special guests were Mr. Geoff Taylor VK5TY, and Mrs. Taylor, and Mr Rob Wilson VK5WA, and Mrs. Wilson. Lastly, but by no means least, arrangements had been placed in hand to ensure the presence of the Federal President of the Wireless Institute of Australia, Dr. David Wardlaw VK3ADW

Before commenting on the opening ceremony a description of the building and facilities and several other aspects of same would be in order

The most striking aspect of the building would be its outside appearance Built mainly of various coloured bricks, it is decorated with cement columns and archwork, and also adorned with cement filigreed patterns between arches and columns One feature which cannot be overlooked is the tall square brick chimney surmounting the building, and incidentally providing an excellent basis for the support of antennas. The chimney is also topped at each corner with concrete columns.

Facilities inside the headquarters are as follows: A large downstairs meeting room providing accommodation for approximately 130 members. An upstairs lecture room for YRCS and technical classes. A mezzanine floor on which the Publications Officer and Equipment Supplies Committee display their wares and also used at meeting breaks for the supply of tea, coffee and biscuits to members and visitors at meetings. Adjacent to the mezzanine floor are a lock-up store room and the separate transmitter room, which is well carpeted and houses three beautiful wood grained consoles made by members, which will be gradually filled with equipment and pressed into greater use as the official Institute Station VK5WI expands. Ladies' and gentlemen's toilet facilities are located to one side of the mezzanine entrance door. The main hall may be entered downstairs from the mezzanine floor or through two side entrances at ground level. The upstairs lecture room has a fire escape to ground level at the front of the building.

One problem encountered during the establishment of the headquarters was that of furnishing, particularly with respect to the seating of members at meetings. It was thus decided to establish a "Chair Fund", to which members could contribute at a rate of $5 per chair This fund was most successful, with a total of $500 being contributed by members. Consideration was given to affixing a plate on each chair showing the name of the donor concerned, however this idea was shelved in favour of a plaque showing the names of contributors to the fund and which would provide a more lasting record (Plates could be removed and lost and chairs damaged and replaced over the years) The plaque is in the form of an etched copper laminate board and hangs on the wall of the main meeting room adjacent to the trophy niche wherein the Remembrance Day Contest and other trophies have resided for some time Amongst the names on this plaque appear some "In Memoriam" for Silent Keys of the Division. Now to return to the opening ceremony itself and arrangements in connection with same.

The visitors and members, numbering approximately 200 in all, provided an overflow crowd. The ceremony was completely recorded on both colour video tape and audio, whilst those not able to crowd into the main meeting hall were able to watch the ceremony on closed circuit TV monitors placed at other strategic locations. Copies of these recordings are, incidentally, available to interested groups and may be obtained by contacting the VK5 Division.

Visitors and members were welcomed on behalf of the Divisional Council by the President of the South Australian Division, Gary Herden VK5ZK. In welcoming all present, Gary detailed the events over the years leading up to this culmination of efforts and referred to the co-operation and interest shown by the Thebarton Corporation and the National Trust in our project. He then introduced Mr. Game of the National Trust, who congrtulated the Division on its efforts to date. Mr. Game in fact had himself been involved with the original building project and had met the late Walter Burley Griffin during this time. He also stated his and the National Trust's appreciation of the way in which the Division had obviously gone about retaining the original aspects of the building and the need for the retention of such memorials as part of our National Heritage.

Following Mr. Game's interesting speech, Gary VK5ZK called upon the Federal President, Dr. David Wardlaw VK3ADW, to address the gathering. David in his inimitable manner did due justice to the occasion. In representing the Federal body and all the amateurs of the Wireless Institute, he referred to the progress and gains made as a result of such an organisation as ours. He also expressed his appreciation of such an opportunity to meet the Council and members of the South Australian Division and passed on his congratulations in respect of this attainment by the Division.

The Division President then introduced the Mayor of the Thebarton Corporation, Dr. Flaherty, who also had many congratulatory remarks to make insofar as the Division's efforts were concerned. In speaking Dr. Flaherty stated that, in his opinion, the Division had available to it a headquarters for as long as it should last, and one of which it could be justifiably proud. At this time the Mayor unveiled a beautifully made plaque in commemoration of the occasion. This plaque also is made of etched copper laminate and carries the inscription:

"This building was officially opened as the headquarters of the South Australian Division of the Wireless Institute of Australia on April 3rd, 1977, by the Mayor of Thebarton, Dr. J. A. Flaherty, M.B., B.S., J.P., in the presence of the Federal President of the WIA, Dr. D. Wardlaw VK3ADW, and Councillors of the South Australian Division· G H. Herden VK5ZK (President), M. J. Hart VK5ZMH, C. J. Hurst VK5HI, R. A. Murphy VK5MM, G Preston, VK5PI, G. M. Bowen VK5XU, I. J Hunt VK5QX, J. B. Mitchell VK5ZJB, C. M. Pearson VK5PE, I. W. Wood VK5NVU"

Also on the plaque is a sketch of the building. Around this unique plaque the border is comprised of the symbols of dots and dashes representing in Morse Code the name of the Wireless Institute of Australia and the South Australian Division. Lines across the plaque in similar form spell out the abbreviation WIA, WIA.

Herein lies a small story! This plaque, and similarly the Chair Fund plaque, were designed by Len Beadell, well known as an explorer, bushman, artist and author of a series of books detailing his experiences in the Australian outback. Even the morse code border was Len's idea. Upon being aproached to carry out the design work, Len agreed with alacrity and applied his talents fully to producing an outstanding example of art work. He even devoted most of a week-end standing outside the building making a number of detailed sketches to guide himself in the final productio. The original of one of these sketches is now a prized possession of the writer of this article.

Following the unveiling of the plaque the Divisional President VK5ZK then spoke a few further words in reply to those who had addressed the assembled crowd. Thus each of the authorities connected with the Burley Griffin Building were ably represented.

During the ceremony Gary VK5ZK read a number of telegrams and messages of congratulations which had been received from far and wide. These were as follows: From — Alice Springs Community College Radio Club. John Emmell VK4ZGB, ex VK5 member. Bondi Junction, N.S.W. — don't build special enclosure for RD Trophy. President Darwin Amateur Radio Club. VK8CW Alice Springs, VK8HA and VK8DI Darwin VK8AC Nhulumby. P29BS. VK6XY. VK6LG Len. VK4ATE, VK4AEM. ZL1BOL, ex Darwin VK2ATY. President VK6 Division. President VK2 Division. VK5WB/4. Cairns Amateur Radio Club. Intruder Watch Co-ordinator, Alf Chandler. Secretary-Manager WIA, Peter Dodd Chairman VHF/UHF Advisory Committee, Peter Wolfenden Editor "Amateur Radio", Bruce Bathols 3UV. IARU Liaison Officer Federal Contest Manager, Kevin Phillips 3AUQ. Federa Historian Federal Education Co-ordinator. Chairman Federal Repeater Sub-committee. Chairman WIA Project Australis Group.

Following the ceremony members and visitors were provided with refreshments and given the opportunity to inspect all of the building and various facilities. A display of antique radio equipment provided by Eric VK5LP and set up on the mezzanine floor provided much interest, whilst the official station VK5WI was on the air. Special QSL cards for contacts with this station on the opening day are being produced.

Many people could be mentioned as having contributed to the efforts referred to herein, but a list of such names would in-

deed be formidable Workers throughout the project from its inception, right up to the efforts of the ladies providing afternoon refreshments, arranging tables and floral decorations, members arranging media publicity, yes, we even made the TV news, cleaning up afterwards, organising PA and recording facilities, and many other functions, all must be thanked for their excellent efforts.

To the Divisional Council which planned the overall week-end activities, from the special council meeting to meet the Federal President and the dinner held the previous evening in his honour, right up to the closing stages of the ceremony and afternoon tea, the whole of the activities were most gratifying. The Federal President was even able to fit into his rushed schedule a short visit to the Micro-Processor Group meeting, and an afternoon at the Federal Councillor's QTH to meet individual members and other officers active in the Division.

So I trust that this written description may have been of interest to whoever has read this far. For the South Australian Division this event has certainly been a milestone, and we hope the beginning of yet another successful era in the progress of Amateur Radio in this State. As at the date of writing the new headquarters is undergoing a great deal of use. Each Sunday the Divisional Broadcast is originated from there with VK5WI operating on 160 metres and relayed on 80, 40, 20, 10, 6 and 2 metres in Adelaide, on other frequencies in both Mount Gambier and Darwin, and until recently on 11 metres in Adelaide.

The monthly Council and General meetings are held in the building. Three nights per week see classes for those studying for the Novice Amateur Operator's Certificate of Proficiency. Youth Radio Club classes are conducted in the building, whilst Micro-Processor Group and VHF Group meetings also take place there

Should you at any time be in Adelaide and wish to view the Burley Griffin Building, it is located in the Thebarton Corporation yards in West Thebarton Road, Thebarton, approximately three miles west of the centre of Adelaide. All visitors are welcome to attend any of our meetings should their visit occur at an opportune time, and should you wish to inspect the building at close quarters, contact with any member of the Divisional Council would permit such an arrangement. A visit of this nature would most certainly prove worth your while I can assure you. ■

A FUNNY THING HAPPENED IN BERT'S SHACK THE OTHER MORNING

A. Shawsmith VK4SS
35 Whynot Street, West End, 4001

Bert's rig is in the bedroom above his shop. The big thing about bedroom shacks is that it's all together in the one room; very cosy and intimate on nights when DX is scarce.

Bert's boudoir is not overly large. There's space for a chair at the rig but no more: a visitor must sit on the bed — in fact, this is what Bert often did when he was listening for a new prefix to show up. He used phones and his wife, Bessie, seldom stirred; she was used to his nocturnal natterings. However, if cold or snuggily amorous, she was likely to roll over on to his side of the bed and throw out an arm around her OM's waist or thereabouts, as if to say, "come on, cut out all that senseless nonsense, come back here where it is warm".

On this particular morning, Bert rose at the usual hour and set about the daily routine. First, a few quick moments at the rig to see what's doing, then downstairs to prepare the shop for its first customers. He usually left the rig on and tried for another short listen before opening up. Ernie the milkman galloped in from the pre-dawn dark outside. He painted a salutory greeting, put down his jiggling crate and prepared to write out a docket. In the silence, there came from above, the faint but clear sounds of the rig. Bert realised he'd left the gain well up.

Ernie tilted an ear. "You're one, too?" he asked.

"I'm one, two, what!" queried Bert.

"A good buddy — a CBer "

Bert drew himself up to ful stature. "I'm a member of the WIA and belong to the amateur service," he said, hoping to establish superiority at the outset.

"Oh yeah, a Ham!" said Ernie contemptuously, "I see your vertical. Does it work any DX?"

"Plenty."

"Me, too — Japan, New Zealand, the States and all over," boasted the milko. "I've got a 4 el. monster moonraker quad up 60 ft."

"Liar!" thought Bert, as he looked out through the door to a quarter wave screwed on to the bumper, but he sarcastically said, "What, on top of the van?"

A smirk spread over Ernie's eighty IQ dial "Nah, at home — and a 100W afterburner, too."

"I hope the neighbours dob you in."

"No way, I tell 'em I'm a Ham novice just starting."

"Great for AR's image," thought Bert, "a nutty rubber duck on 11, posing as a novice on 10." He made a quick mental calculation and began to burn: Ernie's 5 watt CB-licensed set was beaming out 20 times more RF field than his own 100W Ham job. CB is full of real good buddies— they often come into his shop — but what to do with a big mouth "johnny-come-lately" like Ernie. Maybe if he heard some real DX . . .

"Got a minute?" asked Bert.

"Yeah, sure."

"Come on up and I'll let ya hear some real raries." He hoped this would make Ernie drool. "We don't switch channels, we tune bands, ya know!" Again he let sarcasm lace his voice.

At the bedroom door, Bert gave the milko the "be quiet" sign. "Ssh," he said, "the YF's asleep, but don't worry, she won't wake." Bert slid into the chair and pointed to the vacant side of the bed which was nearest the rig. After an apprehensive look at Bessie's somnolent form on the far side, Ernie eased himself gingerly down and donned a pair of phones. Eighty, forty and twenty were open and Bert tuned in a variety of DX and Ernie seemed quite impressed.

As it was early morning, Bert began to feel the call of nature. In short, he'd hafta go — and quick. "Be back in a tick," he told the milko, "tune the rig, or change bands if you want to." He'd hardly made it to the bathroom, when a piercing shriek rent the morning stillness and Bessie, clutching her nightie, shot from the bedroom, closely followed by Ernie with a look on his Dagwood dial, as if his manliness had come under threat — which it had, incidentally.

"There's a strange man in my room," Bessie screamed at Bert (she'd never seen the milko) "and you're sitting there, doing nothing."

"I am d——," began Bert.

"Go on, grab him quick," yelled his YF.

At that moment Ernie bolted past the bathroom, down the stairs and out into the dawn

"Look at that!" said Bert, still unmoved, "not even a goodbye — or a bloody word of thanks." Then, suddenly, he tumbled to what had happened in the bedroom. He let out a great guffaw and rose to his feet, "Ha, ha, ha, so you tried to drag old "Blue Tops" into bed: he musta thought we were trying to set him up for something — they say he's a woman-hating bachelor. That'll take his mind off CB for a while. Suppose I should apologise to him — but no way!"

"Apologise?" screamed Bessie between hysterical sobs.

Bert could see he was going to cop a long rave. He should have sympathetically explained but there was the shop to open, so he turned chauvinistic instead "Belt up," he yelled, "or I'll tell all the customers I copped you in bed with the milko."

Of course Bessie won out in the end Bert is now relegated to the dog house, which, in his case, is at the end of a draughty verandah but it's an ill wind that blows no good at all. As he now no longer has it all together — nor is ever likely to again, he's decided to build a super shack in the yard and throw up a monster sky hook. This will shut the biggest CB mouth and make DX a piece of cake.

By the way, Ernie still gallops in each morning, past a new 4 el. quad, deposits his milk and leaves with never a word of CB or AR. Bert just smiles in a superior sort of way at his departing back. ■

ANNOUNCEMENT

CALLING ALL AMATEURS, NOVICES SHORT-WAVE-LISTENERS

We've often been asked why our amateur radio section hasn't been one of our biggest departments. After all, Dick and many of his staff hold amateur licenses. The reason is simple: we, like everyone else, have had tremendous problems obtaining supplies from local distributors. We maintained it was pointless having a large showroom displaying a lot of lovely samples if we couldn't sell them because we had no stock... We understand many of the suppliers work this way we would not. The problem is over. After many years, Dick Smith has managed to secure an agency for the world's leading amateur gear.

DICK SMITH IS PROUD TO ANNOUNCE HE HAS BEEN APPOINTED A DIRECT DISTRIBUTOR FOR

Check out this incredible YAESU equipment

FT 101E 10 to 160 metre amateur band transceiver with inbuilt AC/DC power supply. Comes with microphone. 260W PEP input SSB, also has CW & AM. Solid state except for driver & final. In ex. Cat D-2880 ... **$850.00**

FT 301 10 to 160 metre transceiver, fully solid state for mobile or base use (12V DC). 200W PEP input (SSB). AM, SSB, CW & FSK. Cat D-2870 ... **$949.00**

FT301S – as above, but 20W PEP. Ideal for novice use. Cat D-2880 ... **$699.00**

FL-110 Linear amplifier, companion unit to FT 301S. 20 watts in, 200 watts PEP input. Turns your novice rig into a full license version. Cat D-2884 **$249.00**

FT 227R – Fully synthesised 2 metre rig, with 'computer select' any channel of 800 available between 144 & 148. Features far above any other unit around at this price has memorizer to instantly recall channel. **NEW UNIT!** Cat D-2890 ... **$375.00**

FL 2100B Linear amplifier with 1.2kW capacity. 10 to 80 metres, uses 2 572B triodes. Twin fans, similar style to FT10FE. Cat D-2546 ... **$578.00**

FP-301 POWER SUPPLY 12 volts at 20 amps. To suit the 301 series transceivers. Cat D-2872 **$175.00** (price applies only if purchased with matching transceiver otherwise duty applies to power supply).

YO-100 Monitor scope. Designed for use with the FT101E, but also suits other Yaesu units. Cat D-2862 **$279.00**

YO-301 Monitor scope to suit 301 series. Cat D-2882 ... **$349.00**

YC-500S Digital frequency counter to 500MHz. Ideal for VHF/UHF workers! Accuracy 1PPM. Cat D-2892 ... **$439.00**

Clock 24 hour type. Smarten up your QTH with the QTR 24, a deluxe ham clock which shows the time in any zone at a glance. Runs for a year on one battery. Cat X 1064 ... **$33.00**

Yaesu Desk Microphone For really smart appearance. Suits all the Yaesu equipment (replaces hand-held unit supplied with rig). Cat C 1116 **$49.00**

DICK SMITH ELECTRONICS

SHOP HOURS
Mon-Fri 9AM - 5.30PM
Sat 9AM - 12 noon
(Employees ½ hour earlier)

bankcard welcome here

Order value | P&P charge
$10.00 | $1.00
$100 or more | Free

SYDNEY
125 York St.
City. Ph 29 1126.
Open 'til 8PM Thursday

SYDNEY
367 Hume Hwy.
Bankstown. Ph 709-6600.
Open 'til 8PM Thursday

SYDNEY
162 Pacific Hwy.
Gore Hill. Ph 439-5311.
Ample parking at door.

SYDNEY
30 Grose St.
Parramatta. Ph 683-1133.
1st floor – friendly store!

MELBOURNE
309 Lonsdale St.
City. Ph 67-9834.
New right in town!

MELBOURNE
656 Bridge Rd.
Richmond. Ph 42-1614.
Easy access, huge stock.

BRISBANE
166 Logan Rd.
Buranda. Ph 391-6233.
Opens 8.30AM

ADELAIDE
203 Wright St.
City. Ph 212-1962.
Now Open. See us!

MAIL ORDER DEPARTMENT P.O. Box 747, Crows Nest, NSW 2065. Phone 439-5311. Post & Packaging

WE HAVE DEALERS RIGHT ACROSS AUSTRALIA – THERE'S ONE NEAR YOU!

1977 WESTERN ZONE CONVENTION

The Annual Convention of the Western Zone, Victorian Division, WIA, was held at Ararat on the weekend of October 22nd and 23rd. Registrations were taken at the Golden Gateway Motel on the Saturday afternoon while Trade Displays were conducted by Vicom, John Lewis Retra-Vision and the Moorabbin Radio Club.

About 90 people attended the dinner which followed. Visitors included Keith VK3YQ (Federal Councillor), John VK3ACA (Vic. Div. Secretary) and Gordon VK3TF (Vic. Div. Councillor). The after dinner speaker was Michael Goode VK3BDL, who spoke about amateur radio in England and Europe. He outlined some of the problems encountered in gaining reciprocal licences and showed a number of slides of his recent trip.

The Ararat trotting track was the venue for Sunday's activities. Mavis VK3BIR and Norma VK3AYL finally found Jim VK3NDT, the 80 m fox. The 27.125 MHz hidden transmitter was found by Gary VK3ZSP and Ron VK3KN. Trevor VK3YJT found the 146.0 MHz hidden transmitter, followed closely by Roger VK3RG. The 144.1 MHz sniffer hunt was won by Dennis VK3ZKH, with Helen Guy, harmonic VK3ZUY, second.

A magnificent array of salads prepared by the Ararat Ladies, led by Lyn, YF VK3NEK, complimented by barbeque lunch.

Following lunch the 300 Hz to 3.3 kHz scramble was won by Mavis VK3BIR, with David VK3AGB second. Chas VK3NET then delighted the crowd with his fully aerobatic radio controlled model aircraft. Stunts performed included several low rolls over the crowd, dropping a load of wrapped lollies each time.

Special guest for the day was Madam Mayor, Jess Boyles, of Ararat City Council, who presented the prizes.

A number of special Western Zone awards were also presented during the weekend.

These included the "Big Ears" award to Oliver VK3AEU, a very regular listener on RWZ-7, a specially modified tuning fork to help George VK3ALS to control his "mountain goat oscillator" and a "new improved power supply" to replace the "gas powered thermocouple" used by Woody VK3AGD during the power strike. A master control switch presented to David VK3AGB will prevent him from accidentally operating on two frequencies simultaneously. A specially silenced saw will allow Pat VK3ADN to cut wood without causing accidental QRM on RWZ-7 ■

The "Big Ears" Award being presented to Oliver VK3AEU by Woody VK3AGD. Left to right: Peter VK3AGO, Woody VK3AGD, Oliver VK3AEU.

Woody entertaining the children after the model aircraft display.

CLEARING THE AIR

Reprinted from Westlakes Radio Club Monthly Newsletter, December 1977

With 500,000 licensed amateurs in the world, and an average increase of over 50,000 a year, there will be a doubling of our numbers by 1980. This would be fine if some beneficent authority were to double the width of our bands, although even in those improbable circumstances we should still be facing the same QRM levels as we are today.

Everyone realises that the congestion on certain bands, at certain times, is beyond the joke, and that complete strangulation is sometimes very near. Therefore, since no one is going to widen them for us, we must take the matter in hand and do it for ourselves.

How could we double the effective width of the amateur bands, as we know them today? One answer would be a worldwide agreement whereby every amateur restricted himself to working for only half the available time — either by going on the air on alternate days, or by restricting his operation to alternate periods of one hour or two hours. This method would be effective (if it could be enforced), but would obviously be extremely unpopular. And it would be an admission of defeat — rather like improving the roads of this country by allowing motorists to drive on alternate days. If we were all to talk less — that would be equivalent to increasing the space available on the bands. And this should be pretty easy, when one notes the enormous amount of long-winded natter that drools on and on without imparting any information whatever. Maybe this is how the term "talkpower" was derived in the first place! And, of course, the use of long calls when a short snappy one would be more than effective. And the use of phonetics repeated at nauseum, like "I spell for you" and so on.

In several European and Asian countries it is obvious that a semi-trained type of operator can be let loose with the most primitive transmitting gear. Either these countries do not go in for any form of monitoring, or their authorities simply do not care what happens as long as it is happening in an amateur band. A VK with a bad signal is relatively easy to deal with; how do you cope with a HA, an LZ or a YU who, apart from having a thoroughly wicked signal, is virtually impossible to communicate with on the subject? Nine times out of ten, if you tell this chap that his signal is a bad T6, with chirp and clicks, he will reply, "TKS for FB report, OM, my QSL for sure" — and then where are you?

An operator who uses up twice the necessary time to complete a QSO is as bad as another man who uses twice the width of the band with a broad signal. It is not the intention that QSOs should be reduced to rubber stamp standards. On the other hand, what one might call "unnecessary prattle" can be cut down a lot and still leave some meat on the bone. Listen to a great many nets and call backs, at some length, and if you are honest you will be forced to admit that a lot of people keep on talking for the sake of talking. The next words are usually, "I'd better keep it short!"

Why do we take so long saying goodbye? How often do you hear three finals and a "final-final" types working out the variations on 73, see you again, hope to meet you soon, thanks for the 100 per cent enjoyable QSO, all the best — simply because they couldn't drag themselves away. And the other type of horror "This is VK2 Blah-Blah over and off and clear, and pulling the big switch, with VK4 Blah-Blah who is located 25 km north of Townsville . . ." The VOX operators are pretty slick these days. But there are those who deliver long monologues and do not listen-through at all. A command of the situation calls for much use of 'aahs" and 'uughs" to hold the VOX in all the time. In the end the group has vanished without a soul on the frequency. The use of phonetics is a waste of time when a 5/9 signal is being received. If you happen to live in Parramaribo, Tananarivo or even Blagoveschensk, the horror is most complete. Use phonetics when plain language can't get through but the misuse makes us all sound like a mob of Charlie Bakers. ■

BASIC ANTENNAE FOR OSCAR SATELLITE COMMUNICATIONS

By Dave Clingerman W6OAL
Submitted by Bob Arnold VK3ZBB

This article presents three basic types of antennas and the derivation of each. Since the launch of the AMSAT-OSCAR 6 spacecraft the author has, at one time or another, tried every type of antenna imaginable, for satellite communications, from a coat hanger ground plane to a log periodic helix.

During this five year period of experimentation the various configurations have been used to set such world records as, first aeronautical mobile amateur satellite communication including an airborne satellite command station over the Pacific Ocean. This was accomplished using a bent brass rod ground plane The first maritime mobile, transcontinental amateur satellite contact was conducted using a "J" antenna for uplink and a dipole for downlink. The first automobile-in-motion amateur satellite Trans-Pacific contact was completed using a "J" on one side of the vehicle for uplink and a Webster Band Spanner mobile antenna on the other side. The claimed longest distance contact via amateur satellite, 9,264 km, Kwajalein, Marshall Islands to Tacoma, Washington was completed using a ground plane and longwire on the South Pacific end of the contact. In the setting of all these records low power was used (below ten watts), so "brute force" is not the name of the game.

A ground plane antenna (GP) can be built onto a female coaxial fitting, a BNC, N, and SO-239 being most common. This allows a coaxial feed, a great convenience. If you're a stickler for low VSWR and good impedance matching, droop the radials to about 42 deg out of the horizontal. This increases the impedance from the normal GP, 36 ohms to approximately 50 ohms. This type of antenna can be used for both uplink and downlink. It is a fixed frequency device and an SWR approaching 2:1 will be noticed at operation ±10% of the frequency for which it was constructed. GPs are noted for their low angle of radiation and that is where you want to put your power, toward the horizons. The "cone of silence" mentioned in various texts occurring directly above a GP may not be noticed due to the very high sensitivity exhibited by the OSCAR series spacecraft receivers. The GP can be mounted almost anywhere without difficulty, preferably above existing structures, an outrigger from the existing ham tower, a pole stuck in the backyard, a fence post; the eaves of the house to mention a few.

From two metres, up in frequency or down in wavelength, the GPs are not very visible, especially if painted sky-blue. I make this point in case the intended operation is to be in a neighbourhood of grouches or if an apartment type of operation

Building the GP involves a minimum of material Brazing rod is the author's mainstay for such projects. Plain copper wire will work, however flimsy. For a ten metre GP, a modified CB antenna will work great plus they are already of proven design and inexpensive. Used ones are readily available for little or nothing For the higher frequencies, as previously mentioned, a coax fitting can be used for the hub. Then radials, at least four, can be soldered to the fitting and the radiating element to the centre conductor. The plane may also be made of a circular sheet of aluminium or formed into a cone in order to achieve the degree of matching desired.

A derivation of the GP is the 5/8 wavelength radiator Several advantages are available in this configuration. The first being an approximate 1.8 dB gain over the conventional GP or almost the same gain as a vertical dipole. Secondly, a slightly lower angle of radiation which is the reason for the increased gain; thirdly, and possibly the most attractive feature, is the radiating element may be affixed directly to the radial system, plane or mounting device. Part of the radiating element is wound into a three turn coil. The centre conductor of the coax is tapped to this coil and soldered in place at the point where the lowest obtainable VSWR is measured on the intended frequency of operation. Brass or copper rod/tubing will work well in this application. Steel rod is hard to work with and equally difficult to solder to. With a little torch work, stainless steel can be used and would weather the best. To keep weather out of the coax, tin the braid before affixing it to the counterporse and saturate the open end with Glyptal or seal it with Selastic Rubber. The 5/8 wavelength antenna may also be built on a female bulkhead coax fitting if desired.

The dipole antenna is a centre fed half wavelength radiator Its characteristic impedance is 72 ohms. It is generally utilised in a horizontal configuration, some applications may necessitate its vertical usage. Horizontally it is a bi-directional radiator; vertically it's omni-directional with a low radiation angle. The dipole when used in the HF region and constructed of wire requires two structures for support. Vertically it may be mounted to a single structure preferably wooden or other non-metallic material in order to reduce pattern distortion. Coax feed is the normally applied method, but 72 ohm ribbon is available from Belden Cable Company. In the application of a folded dipole, 300 ohm TV twinlead is readily available and inexpensive.

A dipole may be constructed of wire, tubing, brazing rod, flat stock, whatever may be available. In the category of VHF/UHF dipoles, construction may be on, again, a coax fitting. Baluns may be added, but for the sake of simplicity are not required.

Mounting a dipole .2-.25 wavelength above a sheet of aluminium that, on a side, is 5% greater than the length of the dipole yields a system of 3 dB more gain than a dipole by itself, and becomes unidirectional The configuration makes it a handy, portable antenna for 2 metres or 70 cm. It does not have quite the aperture (capture area) required for very weak signal reception but for OSCAR work it performs quite well

A derivation of the dipole antenna is the "Turnstile". This comprises two dipoles perpendicular to each other and fed through a 1/4 wave coaxial balun. The result is a cloverleaf pattern effectively doubling the aperture and enhancing the propagational properties. The "Turnstile" may also be mounted above a reflector previously mentioned with the dipole The dipole configurations exhibit a slightly greater tolerance to frequency excursions than the GP. The order of ±12-15% should not raise the VSWR over 2:1 especially at 145 MHz and above. Unless the VSWR is extremely high, it won't be all that noticeable because of the feed line loss. The best policy is to cut the dipoles for the frequency to be most used and don't worry about occasional frequency and accompanying VSWR excursions.

At this point I'd like to introduce a frequency independent antenna, the Discone. The main advantage of this type of antenna for satellite communications is it may be used for uplinking on one bird and downlinking on another. An 8:1 frequency range with the VSWR remaining below 1.5:1 can certainly be appreciated by those of us who don't have a great deal of room for varied multiple arrays. The Discone is fixmounted with ease and simplicity incorporating a small diameter centre pole. It is omni-directional and vertically polarised. The feed-point arrangement is such the 50 ohm coax is used. The material needed in the construction of this antenna requires nothing fancy. Brazing rod and hardware cloth (copper screen) plus a suitable insulating material, preferably Teflon, is all that need be used Such a large frequency range doesn't require the crowding at the bottom end of the design band. In most cases this antenna will be built for 2 metres as the bottom band A rule of thumb is to drop the design frequency 20% below the lowest frequency you intend to use Even to use 100 MHz as the design frequency allows the coverage of three ham bands, two of them common to the present OSCAR series The space required for this antenna is less than two cubic feet. This still isn't too large to be used on an apartment dweller's balcony.

Construction details are not the subject of this article, however, dimensions are available in Bill Orr's *Radio Handbook* and

Henry Jasik's *Antenna Engineering Handbook*

Last, but not least, let's look at the Yagi antenna for satellite operation. The Yagi is narrow-banded but a derivation of the Yagi, the 'Log Periodic", which I will discuss later, is frequency independent. Similar in band-width to the Discone, the Yagi is unidirectional having a front to back ratio of 15-25 dB depending on the number of elements and their spacing. As a basic antenna let's consider a three element Yagi on 2 metres. The boom is approximately 2 feet long. The longest element (reflector) is approximately 40 inches. A gain of 4.5 dB is obtainable over a dipole. It would require a little over 2 feet for turning radius. A light weight TV rotor would be adequate. For best results a fixed tilt angle of 30 deg. is suggested unless elevation control is contemplated. The boom can be wood or metal, the elements aluminium tubing, but stiff clothes line wire will work fine. A variety of matching systems may be used. This is left to the constructor's preference. Myself, I'd use a matching system that allows the use of coax for the sake of simplicity.

As we progress higher in frequency, the Yagi becomes smaller allowing us to add more elements and still conserve space. A word of caution — the more elements, the longer the boom, the sharper the beamwidth, lots of time spent in repositioning (manual tracking), i.e., reduced operating time. In the embryo stages of your satellite communicating, the emphasis should be on operating, not pin-point tracking.

The "Log Periodic" type of Yagi is independent of frequency over about a 10:1 range. This type of antenna allows multiband operation with one antenna and without the compromises of traps. The LP requires no special type of match since one-half the composite boom is feed (hot) along with all the elements on that boom half. The second half acts as a balun plus supports the other assembly of dipole halves. Here again economy is stressed. The elements may be clothes line wire or aluminium heli arc rod swaged into holes in the two-piece main boom structure. Even though the LP has a lot of elements, the gain on any one frequency will not be more than a three element Yagi. In operation, the LP has one element that resonates at the frequency of operation, a longer element behind acting inductively as a reflector and forward element acting capacitively as a director.

I hope to have inspired some of you who have thought about satellite communications to try it. Contrary to some erroneous belief, large steerable arrays are not needed and high power is for the most part wasted. I used as little as 0.5 watt to set the world distance record, so I'm sure you can do a lot with 100 watts to a GP, dipole, Discone or turnstile. Let's hear you via OSCAR ■

THE YOUTH RADIO SERVICE IN N.S.W.

THE YOUTH RADIO SERVICE IN N.S..W

WHAT IS THE Y.R.S.?

The Youth Radio Service is a service of the Wireless Institute of Australia, and was formed to further the Institute's educational aims. It was originally a confederation of Radio Clubs, mostly involved with young people starting out in Radio, but now caters for people of all ages looking for help in studying Amateur Radio, so the term "Youth" is now only partly correct. Thus we often term it the Y.R.S. Education Service.

The Y.R.S. meets annually, and member clubs determine policy and elect an executive committee to carry out the aims of the service throughout the year. The present executive is:

State Supervisor: Ken Hargreaves VK2AKH, 52 Marlin Avenue, Floraville, 2280.

Education Officer. David Wilson VK2ZCA/NMW, 63 Superior Avenue, Seven Hills, 2147.

Treasurer, Rex Black VK2YA, 10 David Street, East Springwood, 2777.

1 **To Member Clubs**

- A system of progressive syllabuses and examinations in elementary radio. Attractive certificates are awarded to successful candidates.
- The regular publication "Superbull" — the SUPERvisors' BULLetin with club news, circuits, and instructional ideas.
- The national quarterly bulletin of the YRS — "Zero Beat"
- A component shop service, supplying components specifically useful for small club-type projects.

To register your club with Y.R.S. costs $3 per year, and this fee should be sent to the Treasurer, Rex Black, together with your club's name, and the leader's or Secretary's name and address.

2. **Services to all Clubs and Individuals** Y.R.S. has available for purchase notes and tapes of use to anyone starting out in radio, or striving for the novice licence.

Materials available are:

- *Y.R.S. elementary notes, stage 1.*—For those who haven't a clue about radio at all. Simply presented in digestible stages. If you can read, this will help give you a start. 48 pages quarto.
- *Y.R.S. elementary notes, stage 2.*—So you handled the Stage 1 alright? Here's some more. Simply written and illustrated. Takes you through components and simple circuitry. 38 pages f'cap.
- *1,000 questions for Novice Licence Candidates.* — Want to walk into that novice theory and regs. exam with confidence? This book has 1,000 multiple choice questions, pitched at what we believe is novice level. Arranged under topics similar to the Westlakes Manual, with additional sections on interference, 150 questions on regulations, and a sample novice-style paper. A key to answers is provided, of course. 120 pages quarto.
- *Learning the Morse Code* — by Rex Black VK2YA. Has been teaching morse since the R.A.A.F. days during the war. This is the companion book to Rex's two C-60 tapes teaching novice morse code. Jam-packed with advice, instruction and reasons why the morse code is easy to learn. 32 pages quarto.
- *Novice Morse Cassettes.*—The two C-60 tapes that go with the book. The tapes are arranged in 20 steps which include 83 individual practices. Equally useful for an individual studying, as for an instructor who would rather teach with a tape.
- *Morse Code Copying.* We have a range of tapes, starting from "Introductory" to speeds ranging in value from 5 words per minute to 12. Each tape covers one speed, and all (whole number) speeds are available to be copied.

What you do is send your tape in, together with 36c worth of stamps to Fred Santos VK2NDN, 8 Cooper Avenue, Blacktown 2148, and Fred will dub on to your tape.

COSTS INVOLVED

Elementary Stage 1 — $1.00 posted or 60c plus post in bulk.
Elementary Stage 2 — $1.00 posted or 60c plus post in bulk.
1,000 Questions — $3.00 posted or $2.50 plus post in bulk.
Learning Morse Code (book and 2 cassettes) — $6.50 posted.

THE SELF-STUDY KIT

Contains. Westlakes Manual, Elementary Stage 1 Notes, 1,000 Questions, Learning Morse Code Book, 2 cassettes, PLUS study guide containing the address of a qualified amateur who will help you through a problem or two (or more).

THE KIT FOR $15.00 POSTED!

DID YOU SAY YOU ALREADY HAD THE WESTLAKE MANUAL? WELL . . . THE KIT WITHOUT WESTLAKES MANUAL FOR $12.00 POSTED

WHAT'S COMING?

We are always looking for new ways to help people onto the air. We also want to help school Technics and Electronics classes.

50 circuits — tried and tested — clear and simple. Coming up soon.

The novice course on cassette — We're working on it. Could it be a learn-as-you-drive, or even a learn-as-you-sleep? Watch for this one.

Novice by correspondence — Another one we're working on.

WE CAN USE HELP TOO — IF YOU'RE AN AMATEUR AND WOULD LIKE TO HELP, OR EVEN JUST OFFER IDEAS — WE'RE INTERESTED! DROP US A LINE ■

REMEMBRANCE DAY CONTEST OPENING ADDRESS

Opening address by Mr. H. S. Young for the 30th RD Contest 1977

(Mr H. S Young has recently retired from the P and T Department, Radio Frequency Management Branch, having held the post of Assistant Secretary, in charge.)

It is a privilege indeed to have been given the opportunity to open your Remembrance Day Contest for this year

Of the various contests that are open to members of the Amateur Service in this country, this particular one is surely of special significance in that it serves to remind us that there have been periods in our telecommunications history when we have had to temporarily shelve the practice of amateur radio and instead take up arms in the defence of our country.

The worth of the amateur radio operator in times of hostilities, with his broad understanding of telecommunications technology, and practical operating experience, has been amply demonstrated, and is no doubt appreciated in the Defence area, as well as by members of the community at large.

Unfortunately, it is one of the sad facts of war that casualties are inevitable and of course Australian amateurs serving in the Armed Forces have suffered in this regard

It is to these men that we should direct our thoughts on the occasion of the Remembrance Day Contest.

What better way of revering their memory and expressing our gratitude for the sacrifices they made, that we may be permitted to pursue our various interests in a free society, than by engaging in a competitive exercise in the very communication medium which in life they knew so well

As you participate in this Contest you will doubtless be conscious of the fact that there are a number of countries whose administrations do not condone amateur radio activities at all I believe we can indeed count our blessings in this regard

In these days, when heavy pressure is being brought to bear by some Administrations for greater radio frequency spectrum, it is not so surprising that some overseas countries consider the amateur service as one rating a very low priority in the allocation of spectrum, if indeed, any at all. It goes without saying, of course, that in such circumstances the Australian amateur movement must remain ever watchful of the influence that such people can bring to bear, especially in the international forum that decides these issues.

It is surely important for the amateur service to continue to be seen, in the eyes of the various communities throughout the world, as one forming a particularly useful part of our human society. A service which is also capable of providing a noteworthy contribution to education in radio communication technology, as well as practical communication expertise

I believe that competitive contests such as the one you are about to commence are a worthwhile contribution towards achieving this end.

And now I know you are all anxious to commence operating in your contest, so I should just like to conclude by saying "thank you for listening", and that it gives me a great deal of pleasure to declare this, your 30th Remembrance Day Contest, open.

Good luck and happy hunting to you all. ■

QSP

LET'S QSY TO CP-LAND

The Radio Club Boliviano reports complete understanding between themselves and their Director-General of Telecommunications, with a cordial relationship and mutual respect so that any transactions, including the granting of licences, revalidations or upgradings are completed within 48 hours. Another aspect of these relations is that the Club's Board of Directors receives preferential treatment, namely that when an interview is requested it is granted immediately and the matters submitted for consideration are resolved within a spirit of great understanding. From ARU R2 News November 1977

WIA CORRESPONDENCE

Postal and Telecommunications Department
G.P.O., Box 5412CC,
Melbourne, Vic. 3001.

Secretary,
Wireless Institute of Australia,
517 Toorak Road,
TOORAK, VIC. 3142.

Dear Sir,

I refer to previous correspondence advising of the temporary withdrawal of the use frequency band 26.96-27.23 MHz by the Amateur Radio Service to accommodate the Citizens' Radio Service and of the arrangements made for the use of the band 28.1-28.6 MHz by the Novice Amateur Service.

It was recognised, of course, that certain Novice Amateur station licensees could perhaps suffer some immediate disadvantages as a result of the withdrawal of the band concerned because of the need to purchase new equipment or, where practicable, to have their existing units modified.

Accordingly approval was sought and has been obtained from the Minister to a proposal that any existing Novice Amateur radio station licensee who was so disadvantaged and who desires to participate in the Citizens' Radio Service (CRS) may be granted a special licence to cover participation in both the Novice Amateur service and the CRS. The annual fee for such a licence has been set at the normal rate for a CRS station licence, namely $25.

It would be appreciated if you could see your way clear to arrange for the new provision mentioned to be publicised through the Institute's normal channels please. The new special licences will be available from Offices of the State Superintendents, Regulatory and Licensing, of the Department.

Yours faithfully,
D. WILLIAMSON,
First Assistant Secretary,
Radio Frequency Management. ■

AWARDS COLUMN

Brian Austin, VK5CA
P.O. Box 7A, Crafers SA, 5152

WALA (Worked All LA)

This certificate is offered by the Norsk Radio Relae Liga (Norwegian Radio Relay League). The following conditions must be met:

1. All contacts with LA/LB stations made after 1 January 1950 are valid.

2. Applicants must produce evidence of contact with 20 different LA/LB stations on any amateur band. At least 6 of these stations must be situated north of the Polar Circle. The location must be clearly indicated on the QSL card. Special rules for amateurs of Scandinavia are printed and published in Norwegian.

3. Contacts on CW or phone or mixed are allowed. Minimum reports required are RST 383 or RS (M) 33 (3). Crossband contacts are not allowed.

4. Contacts with stations with prefixes JW (Svalbard and Bear Island) and JX (Jan Mayen) count for the certificate.

5. The application, including a list of the stations worked, showing date and time, signal reports, frequency, mode and QTH, plus the QSL cards should be sent to:
NRRL Award Manager,
Hans E. Knick, LA4YF
3800 BØ 1 Telemark
Norway

6. A fee of 10 IRCs must be included with your application.

A list of counties (fylke) and county numbers follows:

NORWAY

County Letter	County/Fylke
A	Oslo (City)
B	Ostfold
C	Akerhus
D	Hedmark
E	Opplland
F	Buskerud
H	Telemark
I	Aust-Agder
K	Vest-Agder
L	Rogaland
O	Bergen (City)
R	Hordaland
S	Sogn og Fjordane
T	More og Romsdal
U	Sor Trondelag
V	Nord-Trondelag
W	Nordland
X	Troms
Y	Finmark
Z	Vestfold

OVERSEAS TERRITORIES

3Y	Bouvet Island, Peter Island
JX	Jan Mayen
JW	Svalbard

County letters are in use as the criteria of the WALA Certificate for Scandinavian stations.

(WRN)

R-10-R

Work with the radio stations of 10 radio amateur regions (R-10-R, is issued to all licensed radio amateurs and SWLs who fulfil the following conditions

1. Contact one amateur in each of the 10 Soviet Union call areas during a period of 24 hours. Prefixes such as UA2, UC2, UP2, UQ2 and UR2 are all the same call area.

2. All contacts must be either all CW or all PHONE.

3. All contacts must be made since 1 July 1858.

4. Minimum reports shall be RST 337 or RS 33.

Applications must include the list of contacts with date, calls, type of emission, frequencies and a fee of one rouble or 14 IRCs. The QSL cards are required to be sent along with the application. Send your application to

Central Radio Club
P.O. Box 88
Moscow, USSR.

(WRN)

I am always on the lookout for new awards, or old ones which few of us have ever heard about. Send any information to Brian W. Austin VK5CA, Federal Awards Manager, WIA, P.O. Box 7A, Crafers SA 5152 ■

NEWS FLASH

Word has just been received from the IARU that Worked All Continents Certificate has been issued to Len Poynter VK3NAC.

This should be the first VK Novice W.A.C.

Congratulations, Len. ■

AROUND THE TRADE

AMERICAN ELECTRONIC LABORATORIES LOW PASS FILTERS

American Electronic Laboratories, Inc. (AEL) presents the FLD1000 series of low pass filters, which are eleven element elliptic function filters (with chebyshev response in both the pass band and stop band). These filters operate in the cut-off frequency range between 1 MHz through VHF.

With a size of less than 3 in. by a depth of only .56 in., a width of .75 in. combined with a weight of only 1.5 ounces (approx.), this filter is easily integrated into circuits. SMA female connectors are standard.

Further information is available by writing to Scalar Distributors Pty. Ltd., P.O. Box 48, Kilsyth, Vic. 3137. ■

DIPOLE ARRAY ANTENNA 20-1000 MHz

American Electronic Laboratories, Inc. (AEL) offers technical information on two models in its line of coplanar log periodic dipole array antennas.

Models APN1509 and 1202A cover the 20 to 100 MHz frequency range. They both feature a detachable dipole element assembly for tactical utilization of the antenna. Model APN1509 consists of snap-on dipole elements. The APN1202A elements are bolted in place.

Both antennas meet the requirements for testing in accordance with SAE specification J551 on electro-magnetic interference.

The APN1509 and 1202A weigh approximately 70 lbs. and measure 13 ft. by 15.75 ft. assembled.

Data sheet No. 28-8 can be obtained by writing to Scalar Distributors Pty. Ltd., P.O. Box 48, Kilsyth, Vic. 3137. ■

AUTOMATIC TUNER

Hatfield Instruments announce the release of their "Servomatic Antenna Tuning Unit Type 7550", a completely automatic tuner having infinitely variable adjustment for maximum power transfer from a 50 ohm output transmitter to a whip or long wire antenna between 5 and 40 metres in length.

Features include automatic re-tuning should the geometry or environment of the antenna change, no expensive multi-way cables required between the transmitter unit and tuning unit, no restriction in frequency range between 1.6 and 30 MHz or dial setting.

Power rating: 50 watt with overload factor to 100 watt.

Frequency range: 1.6 MHz to 30 MHz.

Output impedance: 25-3000 ohms resistive ± jW 2000 ohms continuously variable.

Resolution time: Maximum 10 seconds. Typically 4 seconds.

Input power: 12/32 volts DC.

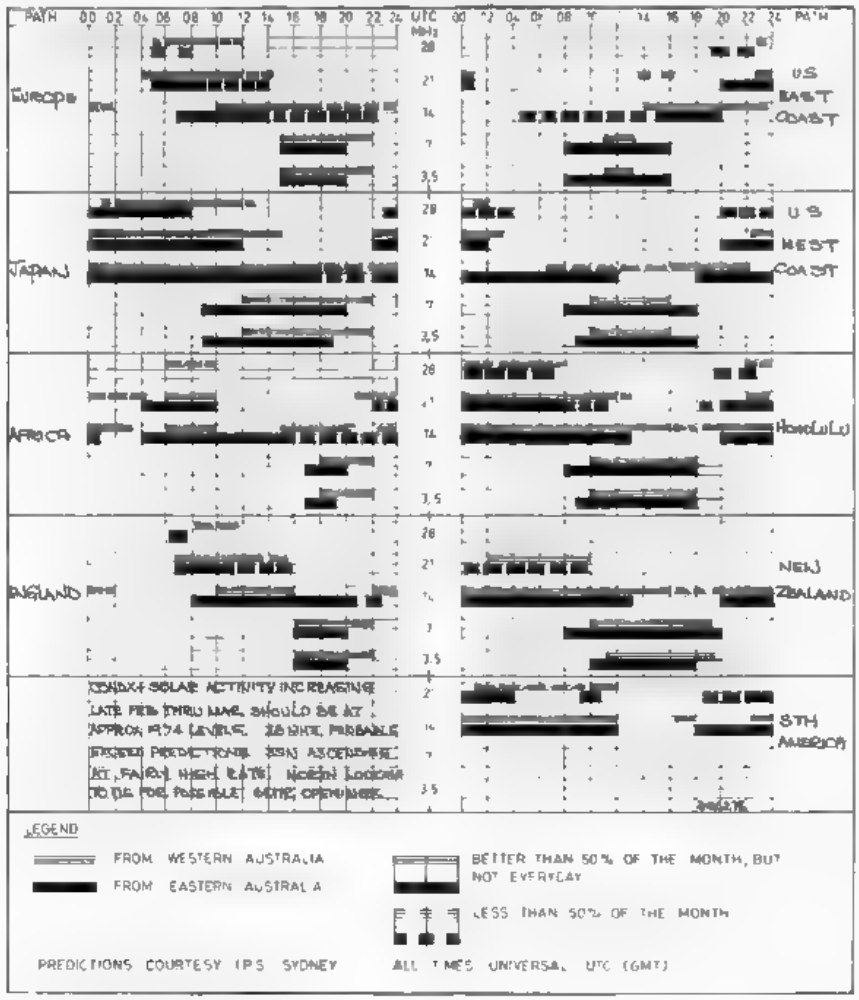
Temperature range: —20° to +40°C.

Dimension: 265 x 422 x 248 mm, excluding connectors and handle.

Contact Scalar Distributors Pty. Ltd., 18 Shelley Avenue, Kilsyth, Vic. 3137. ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3ZGP/NAC



MAGAZINE INDEX

Syd Clark, VK3ASC

BREAK-IN September 1977
Fundamentals of Digital Frequency Synthesizers for the Two Metre Amateur Band, Panel Indicator-Battery Indicator, Coupling Networks; A simple Adjustable Voltage Power Supply; Visual CW, A Soliloquy on Aerials.

BREAK-IN October 1977
A Soliloquy on Aerials. Another Answer to the Mast Problem; Printed Circuit Board Layout for the ZL2AOM Transceiver, Carrier Balance Meter, Fundamentals of Digital Frequency Synthesizers for the Two Metre Amateur Band, World Problems in Radio Communication Pt. 3.

RADIO ZS August 1977
Mobile Radio Communication. A Reliable and Inexpensive Power Supply System for Remote Mountain-top Repeater Stations. Roll Your Own Insulators in Epoxy; A Multi-band End-Fed Inverted-Vee Aerial System.

QST August 1977
Phase III: Toward the Ultimate Amateur Satellite. A Delayed Brake Release for the Ham — II, A Novel Antenna Installation for a Sailboat, Using a Frequency Counter as a Capacitance Meter, Solar-Electric Power and the Amateur, Designing Solid-State RF Power Circuits, Updating the Noise Blanker, A Crowbar-Proof 12V Power Supply, Know Your Receiver, Active Low-Pass Filters for CW or SSB, Mark 40 and Still Going Strong, Twisters Take Tolls — Hams Hurry Help, The French Atlantic Affair.

QST October 1977
Measuring Antenna Gain with Amateur Methods, Optimizing Vertical Antenna Performance, Designing Solid-State RF Power Circuits, Pt. 3, The Emergency Broadcast System, An Extended Frequency Range for the Collins 75S-1, Printed Circuit Boards — An Easier Way, The Gentlemen's Band — 160 Metres, Morse Code to ASCII Translator Using a Microcomputer, The Zany Zener: Build a UTO-1, Update your OSCARLOCATOR — and Your Amateur Radio Library, 20th Jamboree-on-the-air.

RADIO COMMUNICATION October 1977
Power Supply and Control Circuits for a 4CX250B Amplifier, A Multi-mode Transceiver Using SL1600 IC's, A Solid-State 1.8-3.5 MHz Receiver, Further Notes on the DSB1 Mk. 2. ■

UHF for the Amateur...

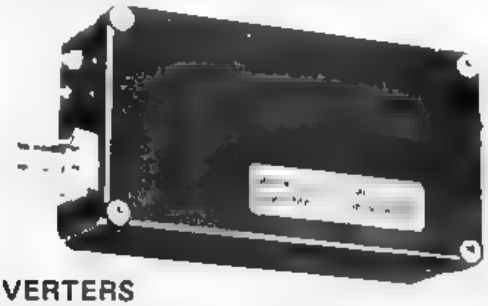
ALL FULLY IMPORTED FROM THE U.K.

MMT TRANSVERTERS
MODEL MMT 432/144 PRICE: **$260**
MODEL MMT 432/28'S' PRICE: **$235**

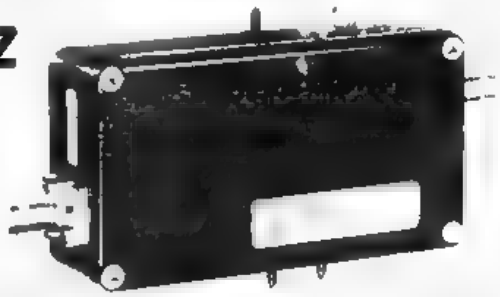
70cm

MMT Power Supply
Matching units for MMT series transverters.
PRICE **$94**

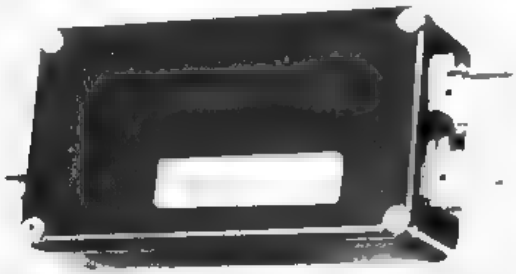
1296mhz



CONVERTERS
MODEL MMC 1296/28 PRICE **$65**
MODEL MMC 1296/144 PRICE **$65**



VARACTOR/TRIPLER
MODEL MMV 1296 PRICE: **$74**



CONVERTER, with Ocsillator Output Facility.
6 METER MODEL 52/28LO PRICE: **$49**
2 METER MODEL 144/28LO PRICE **$49**

CONVERTERS
70CM MODEL 432/28 PRICE: **$51**
70CM MODEL 432/144 PRICE: **$51**
2 METER MODEL 144/28 PRICE: **$45**

500 MHZ COUNTER
MODEL MMD050/500 PRICE: **$175**

PRESCALER

Divide by 10, 500 MHz. Module only, no case PRICE **$44**
TRANSVERTER MODEL MMT144/28 PRICE: **$185**
BNC Connectors, imported from U.S.A. PRICE: **$1.85** each
BNC connectors, imported from U.K. PRICE **$1.35** each

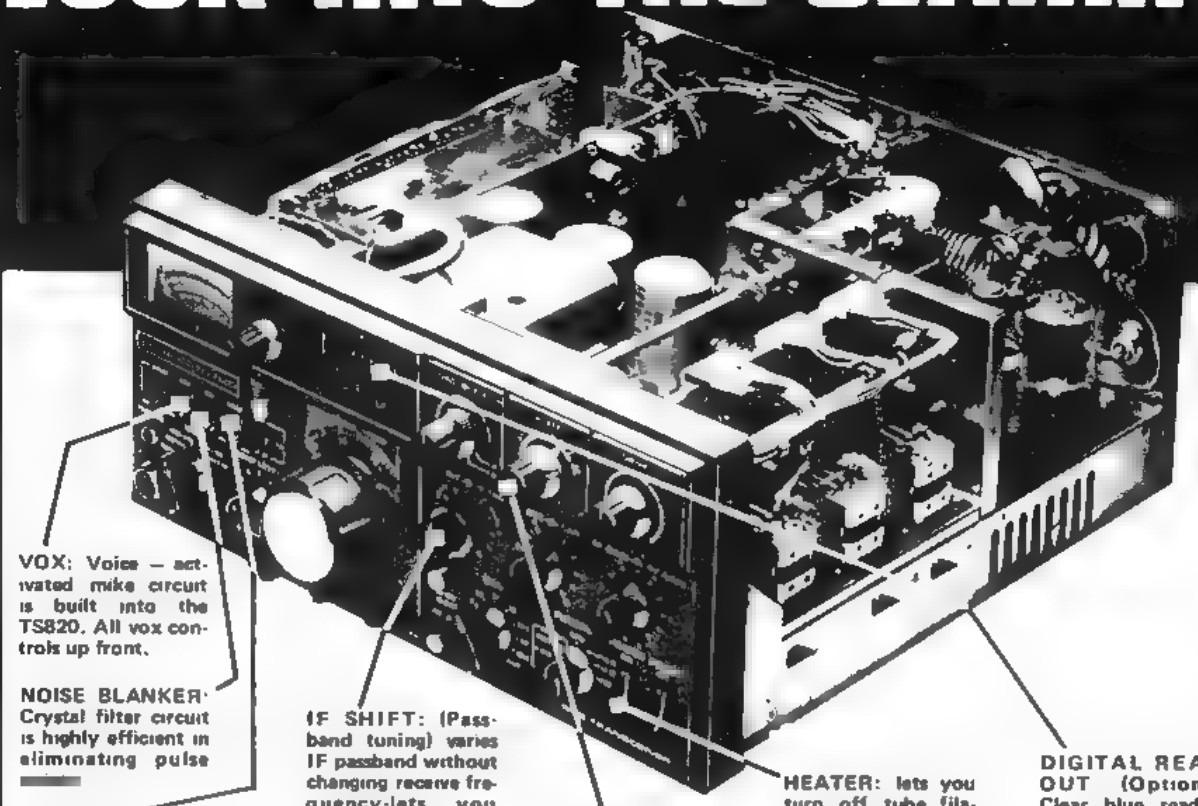
ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE
ONWARDS forwarding. Please add sufficient for freight or postage, excess will be refunded.

Australian Distributors for Microwave Modules Limited, U.K.

Amateur Electronic Imports

P.O. BOX 160, KOGARAH. N.S.W. 2217
TELEPHONE (02) 547 1467
CABLE: "AMATEURIMPORT, SYDNEY"

LOOK INTO THE ULTIMATE



VOX: Voice – activated mike circuit is built into the TS820. All vox controls up front.

NOISE BLANKER: Crystal filter circuit is highly efficient in eliminating pulse

RF MONITOR: lets you hear your own transmission. Also useful for adjusting RF processor

IF SHIFT: (Passband tuning) varies IF passband without changing receive frequency-lets you eliminate unwanted signals. RIT lets you vary receive frequency 5k Hz either side of VFO

VERNIER Plate tuning control has vernier for fast precise tune-up adjustment.

HEATER: lets you turn off tube filaments on receive only. TS820's solid state circuit draws less than most car dash lights.

DIGITAL READ-OUT (Optional) Clear blue readout on receive and transmit
Mixes carrier, VFO and 1st het frequencies.

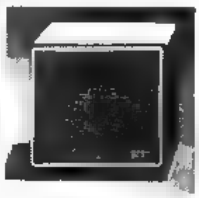
THE BREATHTAKING KENWOOD TS-820 PACESETTER HF TRANSCEIVER

You command the band with our Kenwood TS820 Superb phase lock loop circuitry allows highly accurate frequency derivation without introducing spurious signals. You can switch sidebands (USB, LSB, CW) without recalibrating, too!

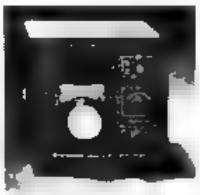
Kenwood's exclusive FET-based VFO gives high stability under all conditions. If you d like to know more, just mail the coupon today

WHEN YOU WANT TO MOVE UP.

TV506 6MTR band transverter



SP-520 80hm external speaker



VFO820 Remote VFO 5.0 – 5.5 MHz

TV502 2MTR band transverter

Contact your nearest Kenwood dealer or Weston Electronics direct

KENWOOD

MARKETED IN AUSTRALIA BY WESTON ELECTRONICS COMPANY, FOR TRIO KENWOOD CORPORATION, JAPAN. HEAD OFFICE: 2 THE CRESCENT, KINGSGROVE, N.S.W. 2208.

COUPON
CALL SIGN
NAME
ADDRESS
Postcode
Phone

WECAR1

AMATEUR SATELLITES

Bob Arnold

VK3ZBB

The latest information received from Harl JA1ANG the Amsat Pacific Co-ordinator via Charlie VK3ACR is that the launch date of OSCAR D is now set at 5th March, 1978. We also hear that the Russian series of satellites have been delayed and will be launched "sometime in 1978"

In the hope of obtaining some authoritative information on the RS series I have been in communication with the Ambassador of the USSR in Canberra. His Excellency tells me he has sent my request to Moscow and I await further information with interest

During November and December, Mode B of OSCAR 7 has been intermittent and quite disconcerting for its loyal band of operators. The cause of the unprogrammed switches to Mode A has been overloading of the transverter by European stations which in turn causes excessive battery drain within the satellite. I had heard of this problem in the UK and of the lack of response from at least two stations when requested to operate in a reasonable fashion. Despite this lack of available orbits, the following new stations have been heard on Mode B, VK2ZTA, VK3YFU, ZL3THM, ZL3AAD, VK2BIE.

Dave Hull VK3ZDH, who operates the Australian Command Station for OSCAR reports that during November he made a vigorous attempt to switch on OSCAR 6 Unfortunately, this effort was to no avail and it must now be presumed that the satellite is permanently inoperable

This information has been confirmed by others, so after 56 months of operation, OSCAR 6 is quiet.

OSCAR 6 was launched from Vandenburg Air Force Base in California on 15th October 1972 and had a designed life of twelve months, and through the dedication of the command stations including our own Dave Hull, the four-year life was achieved.

OSCAR 6 achieved many distinctions, including.

- First Amateur Communications Satellite capable of responding to telemetered commands.
- First Amateur Satellite with dual frequency beacons of 29.45 MHz and 435 MHz.
- First long life Amateur Satellite with regular two-way communication capability.
- The use of Codestore for the automatic retransmission of a telemetered message.
- Used by many US educational institutions for classroom instruction.
- Used in the development of a downed-aircraft emergency location system (ELT) in a joint venture between the Canadian and United States Governments.
- Discovery of the Inverted Doppler propagation mode using the 435 MHz beacon.
- Used in numerous tests involving transmission of medical data between medical institutions and field mobile to medical institutions.
- Numerous propagation experiments.
- Allowed regular communication between all continents involving over 100 countries.
- First Inter-Satellite communication involving AMSAT-OSCAR 6 and AMSAT-OSCAR 7
- First transmission of meteorological data using 110 baud ASCII from a remote platform.

So, we say farewell to our friend and say a sincere Thank You to the designers of the venture, from Australia, Canada, Germany and the USA, together with those involved in the command operation of the satellite.

Last month I mentioned my purchase of a copy of "OSCAR — Amateur Radio Satellites" by Stratis Caramanolis the English language edition of which is distributed by the RSGB at £4.20 post free. The first six chapters of the book deal with the theory and practice of satellite operation including orbital geometry, satellite anatomy, fundamentals of communication and telemetry. These chapters give the reader a sound grounding in the basics of satellites which will be invaluable when considering our future programmes.

Chapter 7 gives a comprehensive review of the OSCAR series giving in one compact volume all the data necessary to evaluate past operating practices. Then follows considerable data to operate amateur satellites ranging from frequency to orbital calculations.

Details are also given of the use of the OSCAR series for educational purposes, QRP tests, Slow Scan TV and data transmission. The book is amply illustrated with photographs and drawings and the basic mathematical treatment of the subject is quite easy to follow through worked examples.

Perhaps my own disappointment with this excellent book was the lack of treatment of practical antenna systems, and I have therefore, presented an article from Amsat newsletter on this subject which may answer many questions I am repeatedly asked. The article is published elsewhere in this issue.

OSCAR, 7 ORBITAL PREDICTIONS, FEBRUARY '78

Date	Mode	Orbit	Time Z	Long.
01	B	14700	0152	84.0
02	A	14712	0051	69.8
03	B	14725	0146	82.4
04	A	14737	0045	67.3
05	B	14750	0139	80.9
06	A	14762	0039	65.7
07	B	14775	0133	79.3
08	A	14787	0032	64.1
09	B	14800	0127	77.7
10	A	14812	0026	62.6
11	B	14825	0120	76.2
12	A	14837	0019	61.0
13	B	14850	0114	74.5
14	A	14862	0013	59.4
15	B	14875	0107	73.0
16	A	14887	0007	57.8
17	B	14900	0101	71.5
18	A	14912	0001	56.3
19	B	14925	0055	69.9
20	A	14939	0154	83.4
21	B	14950	0048	68.3
22	A	14963	0148	81.9
23	B	14975	0042	66.7
24	A	14988	0141	80.2
25	B	15000	0035	65.1
26	A	15013	0136	78.7
27	B	15025	0029	63.6
28	A	15038	0128	77.2

For the benefit of those who wish to listen for or work through, OSCAR 7, the following table, used in conjunction with the above data, will give the **approximate** time of acquisition of the satellite in various locations for a range of evening passes.

For each day of the month listed above, the **GMT time** is given at the time the satellite crosses the equator on the first pass for that day and the longitude is the position in degrees West of the meridian of that crossing.

For each subsequent pass over the equator, add 115 minutes to the time shown and 28.7 degrees to the longitude shown Round off the longitude to the nearest 5 degrees — this figure is called the Ascending Node (AN)

Select the capital city nearest your position and find the AN in the table. Then read off the "Add Minutes" in the top row. Add this to the time calculated above and the result will give the time of satellite acquisition for the selected pass.

Looking at the overhead pass column, if the AN determined is less than that figure the pass will be East of you and if the AN determined is greater than the overhead pass, it will be to your West.

All evening passes are from South to North and are in sight for between 18 and 24 minutes depending on the AN.

For more accurate information and morning pass calculations, refer to Amateur Radio, October 1972.

[illegible]:

For Melbourne 07 Feb. 78

Time 01 33Z Long 79.3° Mode B.

For Pass No. 4

Time is 01.33 + 4 x 115 min.
= 01.33 + 07 40
= 09.13

Ascending Node is 79.3 + 4 x 28.7
= 79.3 +114.8
= 194.1

Rounding off AN = 195

From Time Correction Table —
for AN 195 Add 92 mins. (01.32)

Therefore, Time of Acquisition is .
09.13 + 01.32
=10 45 GMT

As AN 195 is less than but near to, the Overhead pass, the satellite pass will be East of Melbourne but high in the sky at its peak, and being near overhead will be in sight for almost 24 minutes. ■

TIME CORRECTION FOR [illegible]

Overhead	Add Minutes	160	85	90	94	92	80
190	Sydney	160	160	165-175	180-200	205-235	—
200	Melbourne	—	160	165-170	175-185	190-220	225-250
205	Adelaide	—	170	175-185	190-205	210-250	—
200	Hobart	—	—	155-160	165-170	175-190	195-225
				{220-230			
185	Brisbane	155-160	165-170	{175-195	200-215	—	—
225	Perth	190	195-200	205-215	220-270	—	—

IARU NEWS

WARC 79

The August '77 issue of the Telecommunication Journal notified a resolution of the ITU Administrative Council that as WARC 79 will need to take account of technical advances, new services, more intensive use of the frequency spectrum and the use of higher frequencies than presently used and that a considerable amount of technical information will be required to ensure that the Conference achieves the best results, it was resolved to invite the CCIR to carry out the necessary studies and to arrange for a special joint meeting of CCIR study groups on 23rd October 1978 for a duration of four weeks as a Special Preparatory Meeting to provide technical bases for WARC 79.

2m DX RECORD

A new 2 metre DX record was set up on 9th October last during a spell of intense TEP observed on 6m. Initial CW contact was established on 145.9 MHz between YV5ZZ and LU1DAU whereafter both stations switched to SSB. The distance was 5044 km (3135 miles), both stations used 10-element cross-polarised Yagis, the former station was operating portable with 200W input and the latter 100W input. At the end of the QSO YV5ZZ then worked LU7DJZ under similar conditions. Congratulations. ■

REPEATERS

WESTLAKES REPEATER

From Westlakes Newsletter, Oct. 77

One of the most common gripes heard on the air about the Westlakes Repeater is the fact that it times out after two minutes This is the reason that the repeater often isn't idle for long periods without usage Users just don't like timeouts under five minutes! This special feature is known as the Westlakes Waffle-Stopper and isn't there some.

No over should be longer than two minutes on any repeater Always leave a pause between overs for breakers Let breakers in as soon as possible as they don't "break" in for fun. Don't develop the fastest button finger in the west. If possible, go simplex as soon as contact is established. If you wonder why the channel seems dead when you call CQ — ask yourself whether you are a good operator or a waffler

[illegible]

From "The Lyrebird", Oct. 77

The Mid South Coast Amateur Radio Club has made an unusual contribution to mobile VHF operators travelling the Princes Highway on the South Coast of NSW This is the planned provision of "access" points in various locations to enable amateurs to reach repeaters not normally accessible when mobile.

The first of these points, giving access to VK1RGI on Mt. Ginini, has been installed in the Milton-Ulladulla district, 233 km south of Sydney.

An eight-element beam antenna (a "Quagi" refer QST April 77) has been mounted on a convenient tree and the co-ax feeder brought underground to a strong steel box fastened to a fence post on the side of a little-used track.

The gain of the antenna is estimated to be about 12-13 dB. The loss in the co-ax feeder is about 2.5 dB. The SWR is less than 2:1. Provided propagation conditions are reasonable, the ten watts or so from the average transceiver should get a good noise-free signal into VK1RGI.

The box is padlocked, but amateurs can by-pass the lock by pushing a pencil or small stick through a hole in the front lid. Inside the box is about 4 metres of co-axial feeder terminated with a PL259 plug for connection to your rig.

A log book is supplied to measure the degree of use.

The box is painted green with the letter G.I.N.I.N.I. printed to give an official appearance (not that such would stop determined vandals).

To find the box, turn off the Princes Highway at the Ulladulla Post Office (opposite the harbour) and travel west along Green Street for about 3.5 km. At the end of this street are five white "terminator" posts, skirt around these and continue straight on about 100 metres following the power lines. The box is on the right side fence opposite the first power pole.

Prospective mobiles should make a note of the above against the time they may be in this area.

The Club is making surveys to provide more access points for Mt. Ginini and Wollongong repeaters at several locations along the coast.

It would be appreciated if visitors would sign in the log book and securely lock the box.

— Information from Frank VK2HQ. ■

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

The Editor,
Dear Sir,

In the September issue of Amateur Radio mention was made by Sam Voron VK3BVS of the formation of a VK/CB club. After discussions with Sam a Victorian Division of the VK/CB club is being formed and as Victorian Co-ordinator I cordially invite VK3 amateurs to join the VK/CB club and assist in educating CBers to a standard suitable for a pass in the Novice Amateur Licence. The aim of the club is to assist the CBer in the use of his or her station and to minimise friction between the two radio services, Amateur and Citizens, where basically each service achieves similar trials.

Membership to the VK/CB club is open to all interested. The VK/CB club will work together with various CB clubs in Victoria and will reflect a spirit of the amateurs contribution to the development of the Citizens Radio Service.

For further details on the VK/CB club in Victoria, write to Mark Stephenson, 43 Cuthbert Road, Reservoir, 3073, enclosing a stamped self-addressed envelope to assist in a prompt reply.

Yours sincerely,
Mark Stephenson,
Victorian Co-ordinator (VK/CB Club).

The Editor,
Dear Sir,

Just a few lines through your column to thank the many amateurs who gave me encouragement and assistance after the fire which destroyed my home and all my gear. Although the fire was in October 1976 this is the first opportunity I have had to thank them all.

We are now re-established in our new home and will be looking for some new gear to get back on the air.

Again thanks.

73s'
Dan A. Clift VK2DC. ■

The Editor,
Dear Sir,
Re YJ8KM.

My apologies to all Novices awaiting confirmation of QSO with YJ8KM. My recent wedding has delayed despatch of the cards; also the overwhelming demand for that country and its close proximity to Australia (easily worked on 80 metres) have completely exhausted both Ken's and my QSL supplies. A new set of cards will shortly be printed. To those who sent a s.a.s.e. thanks, to those who didn't, check your cards from the Bureau after Christmas.

73's
Steve Gregory VK3OT ■

The Editor,
Dear Sir,

I refer to the letter from Mr. N. W. Lavelle VK3ABH, in November AR, wherein he refers to the Russian pulse interference, and states, quote:

"I have yet to see any evidence that official objections have been lodged at any level."

I would like to inform him and all others interested that, since the Russian P9 Pulse first appeared in our bands, 35 completed Appendix 8 forms covering 105 separate observed intrusions on 100 separate segments in the 7, 14, 21 and 28 MHz band have been handed to officers of the Radio Frequency Management Division of the Postal and Telecommunications Department.

I might also mention that several hundred further reports on other intruders, broadcast stations, etc., have also been lodged. Many more would have been presented if more amateur operators had offered themselves as regular intruder watch observers, but such is not the case. I have made appeals on WIA broadcasts, and since February 1977 have sent letters fully detailing our needs to the secretaries of 10 clubs and zones, and have received **only one reply.**

We **cannot force** the authorities to act on our reports. We can only **make representations.** We have done so, as the above details indicate.

I am yours faithfully,
Ivor Stafford VK3XB,
Acting Federal Intruder Watch Co-ordinator ■

The Editor,
Dear Sir,

Reading an article on "How to become a Radio Amateur" stirred me into writing an article for the benefit of amateurs. In this particular article one paragraph is very interesting, it read:

"If it had not been for the courage, persistence and tenacity of a relatively few enthusiasts — particularly in America and England — amateur radio would have died in those post-war years and the world of communication would have lost us services of hundreds of technical people ."

Perhaps the death of amateur radio is or isn't happening — nevertheless the interest in this paragraph lies in the fact that in our day and age there are still only a few persistent and tenacious people keeping amateur radio alive, and one group doing just that are the Intruder Watchers.

I often hear of people complaining about commercial stations or RTTY stations creating QRM in the 80/40 metre bands — unfortunately these same people do nothing about it! Have they ever heard of heterodyning an intruder — or noting down/taping the intruders — then relaying the information to their Intruder Watch Co-ordinator? Obviously an amateur cannot be a member of every radio club in the State, participate in fox hunts or in seminars and contend with an XYL too — but surely he can contribute a little to amateur radio by ensuring that the bands are free of unwanted and illegal stations?

CBers took over 27 MHz — were they not intruders? Two metres is slowly being taken over in the same manner (although assuming that the intruders are all CBers is false). Unfortunately, you the ordinary amateur will not stir until **your** particular favourite frequencies are threatened! Don't wait until then to act, do it now while something can be done!!

It's not up to Alf Chandler and his Co-ordinators to do all the work — it's up to **you** to help, after all, they are your bands — **AT THE MOMENT!!**

Particular frequencies to watch are 3535 kHz, 3550 kHz, 3560 kHz, 3640 kHz, 7060 kHz, 7070 kHz, and 7090 kHz. Details needed are station identification, types of transmission and periods of transmission. Details should be sent to your Intruder Watch Co-ordinator in the State in which you live.

Yours sincerely,
Mark Stephenson L30648
(awaiting Novice call). ■

The Editor,
Dear Sir,

I would like to advise you on a couple of matters which may be newsworthy in AR.

Firstly, last night (23/11/1977) at 0910Z during a normal sked with my friend Graham ZL2AGU in Havelock North, on 3.570, I suggested that we try to contact on 21.170 MHz, which we did at 0920Z. Quite reasonable signals were received both ways — even though the band was not good. I then suggested that we try 10 metres — 28.550 MHz.

I had another rig running on this frequency and gave ZL2AGU a call at 0930Z, and he came back to me. Not strong — S 0 but readability 5, and he gave me R 4/5 S 0. So I had made three contacts on 3 bands with the same station within half an hour, on virtually two "dead" bands. I guess this is a record.

Now, the other item — and something which needs correcting — is the information which AR published over a year ago, called "G8RV Antenna, by G5RV, the Man Himself."

All text books and AR are wrong in giving the length of the 300 ohm flat TV ribbon feeder as 29 ft. 6 in.

The correct length of 300 ohm ribbon is 32 ft. 6 in. No wonder people were troubled with SWR problems. How do I know? Simple. Recently I had a QSO on 80 m with a ZL who was using a G5RV and his signal was superb — he told me his SWR was flat on all bands except 28 megs and it was 1.5:1 on that band. When asked him for further details, he then told me that he often has a sked with Lou Varney G5RV on 40 m and Varney told him that "somehow the text books published the wrong information."

His own 300 ohm flat ribbon is 32 ft. 6 in. and he does not use a balun.

I gave this information to a "N" call friend of mine and now his signal on 80 m is excellent!

So that's the story. Also what about publishing something on the "10 x 10 International" net, so that amateurs may join in on this 10 metre band and thus populate the band. I am the first Novice in VK7 to have qualified for my "10 x 10" certificate — my number is 14763.

Vy 73,
Jim Davis VK7NOW
Activity Officer MWIA, North-Western Branch.

(Any takers for an item on the 10 x 10 net? —Ed.) ■

15 Broughton Street, Tumut 2720, N.S.W.

The Editor,
Dear Sir,

Not yet being a Novice operator as I failed the last theory examination. I don't know if you will read this letter or print it, but I would like to write it anyway.

(We are doing both, Butch!! — Ed.)

Firstly let me say how truly sorry and shocked I was to hear of the passing of Tubby Vale. I am one of the unfortunate people who never got to thank him on air for his help in the morse sessions. I will miss his key pounding away very much.

I was a bit disappointed to read of the bitterness that some of your readers have toward Citizens Radio operators. I know that most of the rot you can hear is a bit trying, but you must try to remember that most of them don't know what they are doing wrong? I am sure that if they had someone with VK knowledge most of them could become responsible amateurs (let's face it, we all have to learn from someone).

We had a problem in Tumut as small as it is, and we were very fortunate that local VKs here came forward and helped us, and we now have a good Amateur Radio Club.

I am not trying to excuse anyone on any side, I am just feeling glad that our local VKs came forward when they did to help us on to a radio career.

Yours faithfully,
Butch Chapman. ■

EMONA electronics

CBC BANK BUILDING, HAYMARKET — PHONE: 212 4815
Room 208/661 GEORGE STREET, — A.H.: 399 9061

MAIL ORDERS: Box K21, Haymarket NSW, 2000, Australia

WRITE, PHONE OR CALL IN!

NEW-NEW-NEW

National ***RJX SERIES***

A Unique New SSB/CW Transceiver For Amateur Communications

There is no substitute for quality, performance, or the satisfaction of owning the very best. Hence, the incomparable National RJX-1011 amateur transceiver. The RJX-1011 covers all amateur bands 1.8-30 MHz (160-10 metres). It utilizes advanced Phase-Lock-Loop circuitry with dual gate MOS FETs at all critical RF amplifier and mixer stages. There's a rotating dial for easy band-scanning and an electronic frequency counter with digital readout and a memory display that remembers frequencies at the flip of a switch. And that's just the beginning. Matching speaker unit RJX-S1011 and complete external VFO RJX-V1011 also available.

For further information and specifications write, phone or call in!

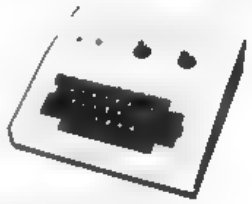
ANNOUNCING — ANNOUNCING — ANNOUNCING

NEW Robot Model 400

All solid state digital random access memory SSTV SCAN CONVERTER

- ALL SOLID STATE RANDOM ACCESS MEMORY
- SLOW-TO-FAST AND FAST-TO-SLOW CONVERSION CAPABILITY
- SSTV PICTURE DISPLAY ON ANY STANDARD CCTV MONITOR
- FRAME FREEZE FROM ANY STANDARD CCTV CAMERA, BROADCAST VIDEO OR VIDEO TAPE SOURCE
- PERMANENT PICTURE STORAGE
- AUTOMATIC OR MANUAL TV
- INTERNAL GRAY SCALE GENERATOR ADJUSTMENT STANDARD
- CAPABLE OF REAL TIME DISPLAY OF DIGITALLY PROCESSED FAST SCAN VIDEO

Go RTTY — EMONA'S silent way!

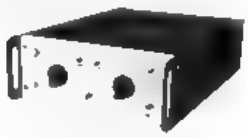


New Model 150 RTTY KEYBOARD

Features.
4 speeds (60, 66, 75 100 wpm)
Built-in AFSK with 3 shifts (170, 425 850 Hz)
Automatic CR & LF at end of 64 or 72 character ing
Built-in low shift CW ID provision

New Model 75 RTTY TO VIDEO CONVERTER

Features:
4 speeds (60, 66, 75, 100 wpm)
Built-in T.U. with 3 shifts (170, 425 850 Hz)
32 character x 16 line video output with scrolling
Connects directly to receiver audio & video monitor



NEW: Medium-Sized Ham Antenna Rotator — FU 400.

Constructed for long trouble-free operation 200 kg vertical weight capacity Extra heavy duty disc brake that prevents wind-milling.

NEW Model DX-555 Counter-Generator

Generator
440 kHz to 30 MHz in 3 ranges.
Output displayed on counter and available at back on rear panel 600 Hz modulation for AM receivers.

Counter
5 digit display, 7 digit readout capability 10 Hz to over 30 MHz (250 MHz with prescaler). Input level 20m Vrms to 5 Vrms (Prescaler 200m Vrms to 2 Vrms) Base oscillator beats directly against WWV

NEW COUNTER-GENERATOR
Two vital pieces of test equipment in one.

LINEAR AMPLIFIERS

SCS: HF3-100L2, 3-30 MHz bi-linear amplifier.
SCS: 2M10-80L, 144-148 MHz, FM/SSB linear amplifier
METRON: MA1000, all solid state, 1 kW amateur band linear amplifier — lightweight, compact and rugged
YAESU MUSEN: FL-2100B, 80-10m linear amplifier

ANTENNAS:

HUSTLER: 4-BTV — vertical trap antenna
HUSTLER: Mobile vertical trap antenna (80-10m)
HUSTLER G6-144A, 6 dB gain base colinear.
HUSTLER: CGT-144, 5.2 dB gain mobile colinear trunk-lip mt.
HUSTLER: BBLT-144, 5/8 mobile with trunk lip mount/spring
CUSHCRAFT: ATB-34, 4 element beam, 10-15-20m

RF PREAMPLIFIERS FOR 3-30 MHz BAND:

Model SX-59 for use with transceivers.

SPECIFICATIONS
Frequency range 3-30 MHz in 3 bands, 3-7, 7-14 14-30 MHz
Gain 20 dB nom. (at 7 MHz), front panel variable control
Attenuator —20 dB attenuation selectable from front panel control
Imped. 50 or 75 ohm systems, UHF connectors on rear panel

AMATEUR BAND TRANSCEIVERS:

NEW — NATIONAL: RJX1011 — Unique SSB/CW 160-10m transceiver with digital readout and matching speaker and external VFO
TRIO KENWOOD: TS520S — SSB/CW, 160-10 metres, with optional digital readout.
TRIO KENWOOD: TS820S, 160-10 metres digital readout
TRIO KENWOOD: TS820, 160-10 metres
TRIO KENWOOD: TS700A — 144-148 MHz all mode transceiver
TRIO KENWOOD: TS600A — 50-54 MHz all mode transceiver.
TRIO KENWOOD: TR-7400A — 144-148 MHz FM transceiver.
YAESU MUSEN: FT101E — 160-10 metres, AM, SSB, CW transceiver
YAESU MUSEN: FT301 series, 160-10m AM, SSB, CW transceiver

RECEIVERS:

TRIO KENWOOD: R300 general coverage BCL receiver
YAESU MUSEN: FRG-7 general coverage Rx, Wadley Loop System.

ALL AMATEUR RADIO EQUIPMENT IS AVAILABLE ON 10% DEPOSIT TO APPROVED BUYERS!

Check EMONA'S most COMPETITIVE Prices!

VHF-UHF AN EXPANDING WORLD

Eric Jamieson, VK5LP
Forreston. 5233

AMATEUR BAND BEACONS

VK0	VK0MA, Mawson	53.100
VK1	VK1RTA, Canberra	144.475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144.010
	VK2RHR, Mittagong	144.120
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTT, Mt. Mowbullan	144.480
	VK4RBB, Brisbane	432.480
VK5	VK5VF, Mt Lofty	53.000
	VK5VF, Mt. Lofty	144.000
VK6	VK6RTV, Perth	52.300
	VK6RTU, Kalgoorlie	52.350
	VK6RTW, Albany	52.050
	VK6RTW, Albany	144.500
	VK6RTV, Perth	145.000
VK7	VK7RNT, Launceston	52.400
VK8	VK8VF, Darwin	52.200
JA	JA2IGY, Nagoya	52.500
KG6	KG6JDX, Guam	50.110
KH6	KH6EQI, Hawaii	50.104
ZL1	ZL1VHF, Auckland	145.100
	ZL1VHW, Waikato	145.150
ZL2	ZL2MHF, Upper Hutt	29.170
	ZL2VHP, Palmerston North	* 25.520
	ZL2VHF, Wellington	145.200
	ZL2VHP, Palmerston North	145.250
	ZL2VHP, Palmerston North	433.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

* Despite the letter from Selwyn ZL2BJO correcting the ZL2VHP beacon frequency to 52.250 last month, in speaking to John VK2BHO recently he said the beacon was still operating on 52.500 — so what gives?

As these notes are written the end of 1977 has arrived with plenty of mixed feelings regarding the type of VHF DX season experienced so far. There seems ample evidence in many areas of VK that something upset the E layers of the atmosphere to produce a long drought on six metres for about a fortnight at least during the middle of December in VK5 as in many of the eastern States areas the 23rd and 24th December were extremely poor, with practically no openings, some improvement on Christmas Day, and to finally come good again on the 26th, and has been reasonably good since.

Then you strike others like Steve VK3OT at Hamilton who says he has not noticed any great changes from usual, but maybe he has been operating from a more optimum location, with skip going well over the 1000 miles to produce long haul signals but not so much at 1000 miles and down to 600 miles which suits VK5 and many other areas. Anyway what really matters is how you personally find it.

Graham VK8ZCJ in Darwin writes again this month with a couple of newsy bits to commence. Firstly, Lyell VS6BE in Hong Kong advises he now has spot frequency allocations in our portion of six metres, namely 52.025 for November, December and January, and after that is likely to be 52.100, which is very good it seems if we are unable to go down to work 'em they will come up to work us!

Graham also mentions receiving the current antenna schedule for KH6EQI beacon viz. 1500 to 2200Z North America, 2200 to 0100Z South America, 0100 to 0400Z North America 0400 to 0700Z Guam, and 0700 to 1500Z South Pacific. If sufficient reports are received the schedule could be re-arranged to suit openings.

A letter has arrived from Dick Northcott, 3D2CM, C/- University of South Pacific, Box 1168, Suva, Fiji Islands, in which he mentions reading my notes for October 1977, and writes to "let you know there is a station at this end of the world interested and set up for 6 metre operation. I have for the past few weeks been listening and occasionally transmitting but with no result. I have a transverter which has an output of about 30 watts PEP and a 3 el. yagi. I am located in an elevated position which has a clear outlook towards New Zealand, but it is a bit cluttered towards VK.

"Frequency wise I am very limited, my transverter works into an HW 32A which only covers 150 kHz and so have arranged to cover from 52.050 to 52.200 which includes the ZL and VK calling frequencies. Unfortunately I am further limited in not being quite sure of frequency to the last 5 kHz having ground a crystal at 6 MHz and found its frequency to the last kHz or so. Another crystal is coming soon which should solve the frequency problem.

"I would be pleased to arrange skeds by either post or via 20 metres, and am anxious to work into VK".

Thanks for writing Dick, and I hope you make the contact soon. We do appreciate your efforts in trying to make a signal available from Fiji on six metres, and probably those of us better situated with regard to operating aids and facilities do not appreciate what is really involved in getting on the air on VHF in such a remote location. Good luck, the fact that YJ8KM from the New Hebrides has been worked very consistently indicates at least possibilities for you.

George Francis, P29HV/VK3HV sends a lot of information including the high incidence of reception of Australian TV stations, as well as from New Zealand Ch. 1. JAs were worked on 6-10, 7-10 (21 contacts) 1015 to 1312Z; 8-10, 9-10, 27-10. First VK contact since 2-7 came on 7-11 to VK4RR, VK4JH and then to Barry VK2ZAY. First real taste of interstate Es DX after 9 months of residence occurred on 17-11 when he contacted VK4ZRQ, VK7DA, VK7ZIF, VK2BXT and heard VK3AMH. During this opening 0620 to 0815Z, Ch. 0 from Brisbane, Wagga and Melbourne were watched, as well as TV from Auckland and Gisborne, N.Z.

Things were relatively quiet until an unexpected opening on 12-12, the day starting off with Brisbane Ch. 0 at 2210Z, the first JA1 heard at 0340 patchy working ZL4LV and ZL3AAN, they came up quickly in signal strength at 0806 enabling him to have 5 x 9 de JA1, 2, 3, 4 and 6, until a quick fade out at 0750Z, 23 QSOs. During this opening George heard the JAs working VK2, 3, 5 and 7 between 0630 and 0730Z. He suggests this opening came as a surprise to both the Japanese and Australian operators.

George also includes copies of a number of letters from JA stations, and the following are extracts from them which could be of interest to readers. Firstly, Jun JI1HHX is very active on 6 metres, and lists the following stations in the Pacific area as active on 6m: HL9WI, KL7FBI, JD1YAA (Marcus Is.), JD1AIZ (Bonin Is.), VS6BE, VS6DA, KG6RO (Saipan Is.), KG6DX. KG6APP, KG6JDX, KG6JIH, KH6HI, KH6IAA, WB5LBJ/DU6, KH6IMH/DU2, FO8DR, KC8CW. He also lists JD1YAA on Marcus Is. as having a beacon on 50.110.

Hatsuo JA1VOK mentions in his letter that numerous stations in Japan run from 10 to 50 watts with 5 to 6 el. yagis, 10 to 20m high. He also mentions receiving a letter from FO8DR in Tahiti who operates on 50.100 every day and had worked three KH6 stations by the end of August.

Kazumasa JE1HYR joined JR1SQU, JR1FZZ and JR1FRG in a Dx-pedition to Ponape Is. from 3 to 11-9, and operated under the call sign KC6PO, contacting 142 stations in Guam, Saipan and Japan. At home he uses a TS520 with a transverter using a 4CX250 and 200 watts input.

Finally from George P29HV, I have received a copy of "Garamut", newsletter of the Papua New Guinea Amateur Radio Society, which is very interesting and contains a lot of information. Of special interest to VK and north Queensland operators in particular is the progress being made with a 2 metre repeater for P29, which will probably be operating by the time you read this. Frequency probably will be Ch. 48 146.400/147.000 and the transmitter will run about 10 watts output. In the interests of reliability and to minimise desensitising problems. Deviation about 7 kHz, time out 3 minutes, and MCW ident will run every 5 minutes at low level. Three good sites in elevated positions are being considered at the moment, and antenna experiments are being conducted to find a good and cheap gain antenna, as until enough funds are raised for the purchase of a cavity duplexer, they will have to operate with two separate antennae. Call sign P29RPM.

So it may not hurt you two metre operators in VK4 at least to watch that repeater in P29, additionally, if you do hear it and have 144 MHz gear as well, remember George P29HV monitors 144.100 continuously, looking south, and calls CQ when he receives high band colour TV from Queensland. This has occurred on the evenings of 28-3, 3-9, 9-10 and 13-11, receiving Ch. 6 Mackay, Ch. 7 Townsville, and Ch. 9 and 10 Cairns for several hours at a time, due mainly to ducting across the Coral Sea. It would seem therefore only a matter of time before a two metre QSO takes place between VK4 and P29, and this may well be aided by that repeater!

Looking at 6 metres in general it would seem from this end anyway that there are a few outstanding days this year such as 13, 19, 26 and 29-11, 2, 3, 4, 26 and 31-12, 1, 2 and 3-1-78. 3-12 seems to stand out from the others due to the extremely wide coverage of contacts available plus at least two JA openings the same day, followed by another the next day, 4-12. On 3-12 the JAs first arrived around 0320Z continuing until about 0400, then they appeared again about 0615, this time including JR6DQO and JH6TEW, which districts seem to be a bit rare around here. It was a good day because even I was able to work VK1 to VK8 inclusive, ZL1, JA1, JA2, JA3and JA8 areas.

Geoff VK3AMK in a letter agrees with all the above, with only slightly varying times for the JA openings, but the areas worked in VK3 and VK7 differed at times, not all stations and areas being available across the continent. Ken VK3AKK worked 18 JAs which included JA0 and JA7 which Geoff could not hear, also Ken worked JA8EXN which was his first JA8 in more than 70 JA contacts, and believed to be the first to be worked from VK3 since Ch. 0 commenced.

The second Japan opening the same day was not heard by Steve VK3OT, but by Geoff VK3AMK and here in VK5. And it seems some call signs are now becoming familiar from Japan, apparently being the most keen, and keeping a good ear on the band e.g. JA1LZK, JA2DDN, JA2BZY, JA1RJU JA1VOK, etc.

Geoff also remarks on the incredible number of stations which continue to use 52.050 after establishing contact, so that portion of the band becomes hopelessly blocked. The message is obvious!

Robert VK3AUR writes to support the campaign to regain 50-54 MHz, and offers a number of interesting thoughts. I also want to thank Geoff VK3AMK for an extensive letter outlining a number of ideas on the same subject — thanks Geoff, they are filed temporarily! Anyway, back to Robert, who takes both the Melbourne and Adelaide 2 metre ops. to task for lack of interest in the band — remaining mostly on repeaters — this extract from his letter is good. "many only use repeaters, working their 'DX' the easy way. I personally get quite upset to hear Mt. William Ch. 7 clogged with VHF DX experts working Melbourne to Adelaide, expounding on the virtues of this or that black box, and generally patting themselves on their collective backs, while a few dyed-in-the-wool real VHF operators call vainly towards Melbourne or Adelaide (beacons running 20 dB SN or better) to nil response except from one or two regulars." The cap will fit those with the correct head size.

Robert reports a rather exclusive 6 metre opening to him on 6/11 from JA when he heard many signals and worked JR3KRK and JR3AKY during the 10 minutes the opening lasted. Roy VK3AXV who is 90 miles away heard nothing, and it appears no one else did. Exclusive job.

Although Robert calls the following 'bitching" and is concerned to a degree he has written it I feel there is surely a message here which I think you, as an amateur, should read at least twice, not once, and digest, some of the thoughts may be applicable to you.

"Not many amateurs seem to be interested in developing their stations these days, black boxes have adedd to VHF/UHF activity, but to the detriment of DX.

"(a) To name but one rig, the C202 has poor overall noise figure, and the addition of a PA means big mouth, little ears.

"(b) From my own experience, home made 'long yagis' don't as a rule exhibit the gain claimed. Enter gain measuring contests and observe red faces from some who have learnt the lesson.

"(c) Lousy co-ax e.g. ex disposals, yellowing dielectric.

"(d) Clogging call frequencies with local chatter and failing to leave at least a 3 second break between overs.

"(e) Not bothering to listen with attenuator (sorry, beam) pointed in a useful direction, at least line it up on a worthwhile point.

"(f) Lack of interest in coming on the band!

"If 10 watts into a non-directional antenna (VK3RTG beacon) in a not too brilliant location in Melbourne produces 10 dB S/N or better 180 miles away, logic dictates that 3 watts into a 10 dB gain antenna should equal or better that performance, depending of course on your own location. It's not being done. The band has to be really open to hear or be heard except for a few really dedicated stations, who go to the trouble of making sure their station is efficient.

"I don't suggest that vast amounts of money be spent, but a 2N310 pre-amp costs about $5, and makes a world of difference. Sorry for the bitch, but it's most disheartening especially when there is so much pressure from outside interests who would take our 144 and 432 MHz bands in a flash if they could lay their hands on them."

'And just to keep some happy. I'm not really against back boxes, I had a beaut QSO with Jim VK4ZMJ in Bundaberg for about two hours on 6-11 as Jim drove around on his motor cycle using an IC502, hand held. At times his signal peaked to S9+. He had a ball!'

Well Robert, I don't think anyone will be too snakey with you, probably what you have said is fact in many circumstances. I can support you in saying just how much it means to spend some time (and money) on upgrading an antenna system. Formany who have visited my QTH will testify, I don't live in a good VHF area, so I work hard for all I get in the way of contacts, especially on 144 and 432 MHz. However, at the end of November I finally was able to place in position my two recently constructed 16 element yagis for 144 MHz, spaced 14 feet apart, with the top yagi of the pair 68 feet high. Proper matching, baluns were used, and a mast head pre-amplifier fitted for receiving — this can be switched in and out of circuit as required — and the improvement in results over the original 8 element yagi at 57 feet (which is still in position for evaluation purposes) is staggering to say the least, particularly when the amplifier is used. I can now receive as good a report as I can give in return, and it makes me feel good for the first time for years. The next thing is to find the time to make good use of it, but I do believe that if one makes a worthwhile attempt to upgrade equipment, there is more likelihood of it being used often because results will be more rewarding on a greater number of occasions than with a mediocre assembly. My next move is to do much the same for 432 MHz.

Steve VK3OT has written with some interesting para. He adds further to the fantastic opening all over Australia and New Zealand on 3-12. VK3 worked ZL1, 2, 3 and 4 that day. YJ8KM worked first ZL2 ever for number 1 QSO YJ to ZL. VK9NI working into Sydney on 26-11, though appears not to have been heard much since.

On 20/11 TV channel from Madan Indonesia, sound on 53.75 AM was into Western Victoria for six hours at 5 x 9+. Witnessed also by VK3AMK and VK5SV over phone. Steve worked Ed VK8ZER/6 for first 6 metre QSO with Giles, WA at 0430Z 52.050 on 17-12. Ed is now QRT and will be taking up residence in Townsville shortly.

Steve is not very pleased at the prospect of a 100 kW Ch 5A station about 15 miles north of his Hamilton QTH in 1980. Exit all Western VK3 contacts on 2 metres, severe restrictions probably will spell the end of 2 metre contacts across the border between VK5 and VK3 and VK7 — still, it's an easy way to ease the amateurs off 144, vested interests will be happy, more money for licence revenue — it's the thin edge of the wedge, you see. Hugh VK5BC reports local Ch. 5A causes severe disrupt on to low end of 2 metres. Ask John VK2BHO what his Ch 5A does to him on 144 MHz?

John VK7JV confirms that Greg VK7KJ worked KH6NS awhile back, date unknown, reports were 5 x 7 sent and 5 x 4 received. We all offer our congratulations to Greg. And of course, VK7 have been really given the royal treatment this year, with JA openings on 6 metres, on 13-11 for 3 hours, with some stations working nearly 40 JA stations. JAs back again on 14-11 and 3-12 etc etc. Not to be outdone, 144 MHz opened to VK7 on 13-11 when David VK5KK worked VK7ZAH and VK7ZIE with distances around 750 miles, via an inversion.

I notice an "In Memoriam" notice in the WA VHF Group News Bulletin for Nov/Dec which reads: "Oscar 6 officially died on orbit number 21405 on 15-8-77 after failing to respond to ground command signals. It was launched on 15-10-72, its anticipated life-time then was about 1 year. Well done, Oscar 6. R.I.P." Indeed well done.

A few snippets from my note book. Tony VK6BV in Kalgoorlie was noted working ZLs on 6 metres early December, that's a long haul . . . reported in Ham Radio Sept 1977 a 5000 km contact on 144 MHz across the Atlantic between Brazil or Venezuela and the Ivory Coast of Africa, that's also a mighty long haul, and will no doubt eclipse the terrestrial record for that band if verified. I will obtain details later . . . There have been quite a number of good 144 MHz openings between Albany and Adelaide, 10-12 VK6XY, VK6BE and VK6KJ all 5 x 9+, VK6XY and VK6WG also on 432.1 5 x 9, and on 1296.12 MHz David VK5KK had a contact extending over 1½ hours with his 3 foot dish being supported on the back fence by father VK5SV, signals 5 x 6 . . Graham VK8ZCJ has passed his CW . . Wally VK6WG had his VHF tower struck by lightning on 22-12, damage to aerials, but not a lot of equipment damage I hear . . . YJ8KM heard working VK3OT on 24-12 . . . 144 open to Albany on 26-12, many stations worked in VK5 and VK3, Bob VK6BE heard Charles VK3BAR on 144.1 at 1215Z, 144 open intermittently all day . . . Ken VK6ZFQ on Koolan Is. off NW coast of WA has worked all JA districts on 6 metres in the year he has been there . . . VK6ZGF Alice Springs copied TV Ch. 4 on 27-12 at 0425Z good signals, Cr. 3 from somewhere snowfree.

Finally, two things. Those requiring QSLs for contacts with YJ8KM and VK9NI should send their QSL with SA envelope to Steve Gregory, VK3OT, P.O. Box ZZ, Hamilton, Victoria.

Secondly, those full call amateurs who send CW on the VHF bands should give consideration to slowing down their speed of sending if they want more contacts. Please bear in mind there are quite a few limited licensees with a knowledge of CW, particularly as some also now have N calls, and 15 to 20 w.p.m. CW is not called for on VHF when calling CQ. If you make contact with a good CW operator then use the speed which is most satisfactory to both operators, but KEEP THE SPEED DOWN when sending your call sign during a CQ call. Anyway, it's long been proved through EME contacts that high speed CW has little use for marginal contacts through noise and with the fading characteristics of sporadic E VHF, and on 144 and 432 MHz a marginal CW reader is more likely to persevere with a weak CW signal if he has a chance of deciphering it, he won't spend long with a 15 to 20 w.p.m. signal if he can't copy better than 10. Give it a thought boys, the above might make some sense. I know it is not so easy for a practised operator to send rather slowly, but don't worry, the guy at the other end will sort it out!

Thought for the month: "A different world cannot be built by indifferent people".

The Voice in the Hills.

STOP PRESS

1-1-78.—Big six metre opening, VK5 worked VK1, 2, 3, 4, 5, 6, 7 and 8. 0900 144 MHz opened up to VK3, with Eric VK3BEH 5 x 9+, then to VK3OT, VK5DK and VK5NC (Mt. Gambier), Roy VK3AXV, then all repeated again. Steve VK3OT watching TV from Albany.

2-1-78.—144 MHz continues with excellent signals from VK5 to VK3OT, VK3BJ, VK3LT, VK3AXV, VK3ZHY, VK3BEH, and several others, plus Mt. Gambier VK5DK, VK5NC, VK5MC, VK5ZCH etc. Michael VK3ZQV about 100 miles east of Melbourne at Carrajung 5 x 9+ at times.

432 MHz also open. David VK5KK worked Michael VK3ZQV with signals 5 x 8/9 both ways. Michael also worked by Peter VK5ZPW, and Keith VK5MT. Not sure who really worked who on 432 at this stage, but I know Keith VK5MT, Roger VK5NY were also in it from this end and Les VK3ZBJ at least from the VK3 end.

To cap off two nights of really good VHF/UHF DX I heard Garry VK5ZK working Ed VK8ZER/5 and Mike VK8ZMA/5 both at Loxton on the River Murray on 144.1 At 1255Z I also worked them, they were using an FT221 and an IC202 to a vertically polarised antenna, and both pieces of equipment were contacted here. Mark VK5ZVO then worked them.

It was also noted during the 2 metre opening on 2-1-78 that Col VK5RO from his super location at Woodville worked Mike VK3LT in Melbourne, using his IC202 and whip antenna. Not a bad effort Col.

Also 2-1-78, Kerry VK2BXT (ex-VK5SU) worked Kevin VK7ZAH, Daniel VK7DA and Joe VK7JG on 144 MHz. 6 metres was very strong into VK2 at the time. ZLs into VK3 at the same time.

It was almost VK5 to VK4 on 144 MHz on 1-1-78, when the interrupted carrier from Rod VK4ZRQ was monitored at the VK5LP establishment, and relayed back to Rod on 6 metres. 144 only stayed open for a minute or so, thus no contact resulted there wasn't time to get organised once Rod had recognised his signals.

Looks like the "season" did come good for a while after all.

VK5LP ■

SPECIAL ANNOUNCEMENT
NEW WORLD 432 MHz RECORD?
On 11-1-78 Les VK3ZBJ and Wally VK6KZ/6 near Albany, made contact on 432.125 MHz. Reports were 5 x 3 both ways, distance 2470 km.

The current Australian record is 776 km between VK5ZKR and VK7ZRO and the current World Record is 1940 km. Les has previously worked 2430 km on 432 MHz but has not made a claim. How about making an application this time, fellows? Congratulations for a fine effort Wally and Les. ■

C.A.R.E.

(Community Amateur Radio Events)

In world-wide radio magazines, one frequently reads of the splendid work done by amateur radio operators in emergencies relating to earthquakes, fires, sickness, lost persons, air/road/rail accidents etc. Such performances are almost a daily occurrence in the USA, but in Australia, fortunately, the need is seldom presented. But when it is, VK amateur radio operators too, can rise to the occasion.

There has recently come to our notice, rather belatedly, unfortunately details of the splendid work done by Reg Ross VK3YD, during an emergency involving the Government radio station at Casey Base in the "deep south". Reg happened to be around at the "right time" — a time when radio communications failed between Casey Base and the Antarctic Division's Headquarters station in Melbourne. According to subsequent letters from the Director of the Division, and the O.C. Casey Base, Reg won appreciative comment for "assistance given by **VK3YD in the re-establishment of communications between both stations following the breakdown at Casey (station VNJ).**"

It is understood that at the time of the emergency, Reg was operating SSB on 14 MHz.

Well done, Reg VK3YD
Submitted by Eric Trebilcock. ■

QSP

During a meeting between DARC and Federal German Post Office officials the W German administration agreed to a change in official classification of the amateur radio service from "Private operation (which includes CB) to "Technical Experimentation Operation". This decision will be put to the next meeting of the CEPT sub-group concerned. JARL has submitted an amateur radio service WARC 79 paper to their P and T Ministry.

Best wishes to the Radio Society of Sri Lanka upon celebrating its 25th anniversary.

ADDENDUM

Please amend QSL information on page 54 of December issue — 3rd column Tasmania Divisional Information.

QSL Bureau Postal Address
G.P.O. Box 371D, Hobart 7001

QSL Manager
Chas. Harrison VK7CH, 95 Wentworth St., Bellerive 7018.

ELECTRONIC ENTHUSIASTS EMPORIUM

POPULAR INTEGRATED CIRCUITS IN STOCK

CA3012	CD4026	CD4724	LM380N	MC1496K	UAA180
CA3013	CD4027	CD40097	LM381N	MC1590G	UA723C LM723
CA3018	CD4028	CD40098	LM382N	MC14553	UA757
CA3023	CD4029	CD40174	LM387N	MC1648P	ULN2208
CA3028A	CD4030	CD40175	LM395K	MC4044P	ULN2209
CA3035	CD4031	CD40192	LM555CN	OM802	ULN2111
CA3039	CD4035	CD40194	LM555H	SAJ110	74C00
CA3046 LM3046	CD4040	CD40195	LM556N	SAK140	74C02
CA3053	CD4041	DM8097 1 98	LM562B	SD305DE	74C04
CA3059	CD4042	HEF see "CD"	LM565N	SD306DE	74C10
CA3060	CD4043	LH0070	LM566CN	SL415A	74C14
CA3079	CD4044	LM114H	LM567CN	SD425A	74C20
CA3080	CD4045	LM301AN	LM709N	SL437D	74C85
CA3081	CD4046	LM301CN	LM710CN	SL440	74C86
CA3082	CD4047	LM304H	LM710CH	SL442	74C90
CA3083	CD4049	LM305AH	LM723H	SL447	74C154
CA3086 LM3086	CD4050	LM307N	LM723N	SL449	74C160
CA3089E	CD4051	LM308V	LM725N	SL610C	74C162
CA30900	CD4052	LM309K	LM733CH	SL612C	74C174
CA3091	CD4053	LM310N	LM733N	SL613C	74C192
CA3120E	CD4066	LM311A	LM741CH	SL620C	74C901
CA3127E	CD4068	LM311H	LM741CN	SL621C	74C925
CA3128E	CD4069	LM312H	LM747CH	SL623C	80C95
CA3130T	CD4070	LM317K	LM747CN	SL622C	MISC
CA3140T	CD4071	LM318N	LM748CN	SL624C	AL5352
CA3600	CD4072	LM319H	LM1303N	SL630C	GL4484
CD4000	CD4075	LM319N	LM1310N	SL640C	GL5253
CD4001	CD4076	LM320K	LM1458N	SL641C	OL31
CD4002	CD4078	LM320T	LM1488N	SL645C	RL4484
CD4006	CD4081	LM322N	LM1489N	SL901B	RLS023
CD4007	CD4082	LM323K	LM1496N	SL917B	FND357
CD4008	CD4085	LM324N	LM1808N	SL1310	FND500
CD4009	CD4086	LM325N	LM3028 CA3028	SL3046	9001
CD4010	CD4093	LM326H	LM3045	SP8505	9368
CD4011	CD4502	LM339N	LM3086	SP8515	9601
CD4012	CD4503	LM340K	LM3900	TAA300	NSN71
CD4013	CD4510	LM340T	LM3905	TBA570	NSN74
CD40 4	CD4511	LM349N	LM3909	TBA700	TIL305A
CD4015	CD4514	LM358N	MC1035P	TBA810A	11C90
CD4016	CD4515	LM370H	MC1312P	TBI750A	95H90
CD4017	CD4516	LM371N	MC1314P	TCA220	2102 2
CD4018	CD4518	LM372H	MC1315P	TCA290A	2513N
CD4019	CD4519	LM372N	MC1350P	TCA420A	S1883
CD4020	CD4520	LM373N	MC1351P	TCA580	S50242
CD4021	CD4528	LM374N	MC1454G	TCA730	MA1002
CD4022	CD4538	LM375N	MC1458 LM1458	TCA740	7805CP
CD4023	CD4555	LM377N	MC1468L	TDA1005	7824CP
CD4024	CD4556	LM379	MC1488 LM1488	UAA170	
CD4025	CD4720				

In some cases pin for pin substitutes will be supplied

POPULAR SEMI-CONDUCTORS STOCKED

7400	7483	74S258	74LS174	BD238	2N3566
7401	7485	74S196	74LS175	BD437	2N3568
7402	7486	82S23	74LS181	BD438	2N3569
7403	7489	8281A	74LS191	BF173	2N3638
7404	7490	82S90	74LS192	BF180	2N3638A
7405	7491	74LS00	74LS193	BF194	2N3642
7406	7492	74LS01	74LS194	BF200	2N3643
7407	7493	74LS02	74LS195	BFY50	2N3694
7408	7494	74LS03	74LS196	BFY51	2N3731
7409	7495	74LS04	74LS221	BPX25	2N3819
7410	7496	74LS08	74LS253	BSX19	2N3866
7411	74100	74LS09	SEMICONDS	BU126	2N4037
7413	74107	74LS10	AC125	MFE131	2N4249
7414	74121	74LS11	AC126	MJ802	2N4250
7416	74122	74LS13	AC127	MJ2955	2N4355
7417	74123	74LS14	AC128	MJ4502	2N4356
7420	74132	74LS20	AC132	MPF102	2N4360
7422	74141	74LS21	AC187	MPF103	2N5245
7425	74145	74LS22	AC188	MPF104	2N5457 MPF103
7426	74150	74LS27	AD149	MPF105	2N5458 MPF104
7427	74151	74LS28	AD161/62	MPF106	2N5459 MPF105
7430	74153	74LS30	AS327	MPF121	2N5485 MPF106
7432	74154	74LS32	AT1138 2N301	MPF603	2N5590 MPF603
7437	74157	74LS37	ASY17	TIP31C	2N5591
7438	74160	74LS38	BC107	TIP32C	2N6027
7440	74164	74LS40	BC108	TIP120	2N6084
7441	74165	74LS42	BC109	TIP125	BA102
7442	74174	74LS73	BC177	TIP141	OA47
7445	74180	74LS74	BC178	TIP2955	OA90
7446	74181	74LS75	BC179	TIP3055	OA91
7447	74185	74LS78	BC182	TT800 2N4037	5082 2800
7448	74190	74LS86	BC212	TT801	40440 2N3731
7450	74177	74LS90	BC327	2N301 2N2869	40637A
7451	74191	74LS92	BC337	2N706A	40673
7453	74192	74LS93	BC547	2N918	40822
7454	74193	74LS95	BC548	2N2222A	40841
7460	74194	74LS109	BC549C	2N2646	BZX61
7470	74195	74LS113	BC559	2N2869	BZX79
7472	74196	74LS114	BC639	2N2904A	BZX70
7473	74S00	74LS151	BC640	2N2905	BZY93
7474	74S10	74LS153	BD131	2N3053	BZY91
7475	74S20	74LS157	BD132	2N3054	PA40
7476	74S74	74LS163	BD139	2N3055	PB60
7480	74S112	74LS163	BD140	2N3564	MEL12
7482	74S251	75LS164	BD237	2N3565	FCD820

PC BOARD

FIBREGLASS —
4" x 3" S.S.
6" x 4" S.S.
8" x 3" S.S.
6" x 6" S.S.
8" x 6" S.S.
12" x 4" D.S.
12" x 12" D.S.
6M CONVERT
2M CONVERT

DIP SOCKETS

8 PIN
14 PIN
16 PIN
24 PIN
40 PIN

TOROIDS, etc.

IRRESPECTIVE OF MIX

T-12
T-25
T-37
T-50
T-68
T-80
T-94

Free Data on request.

COIL FORMS

NEOSID772/1
5027/6PLB
7100CAN
5200/8PLB
7300CAN
F16 or F28

MISCELLANEOUS

SO239
PL259
BNC Plug
BNC Sockets
7 Seg Displays
Miller Coils Indent
A.R.R.L. See E.T.I.
Publications or write

BOXES
108 x 108 x 50
216 x 108 x 50

INSTRUMENT BOX
180 x 180 x 70
(Black/White)

VALVES

6DQ5	*6146
6GK6	*6146B
12BY7A	*6939
OD3	*4-125A
7360	*4-250A
*QQE06-40	*6JS6

* Indent only

PUBLICATIONS

Write or Phon for latest list.

Prices for all listed items available on application.

SEND NO MONEY
Where QTHR, simply order by mail or phone and pay on Invoice. No charges. No P/P under 500g (1 lb.).

SHOPS 2 & 3, POST OFFICE ARCADE, 7-10 JOYCE STREET, PENDLE HILL, N.S.W. 2145 — TELEPHONE 636-6222
MAIL: P.O. BOX 33. PENDLE HILL. N.S.W., 2145
Mon. Tues. Wed 9-5 — Thurs 9-7 — Fri 9-5 — Sat. 9-12
PLENTY OF PARKING AT REAR STD 02

Sideband Electronics Sales

Distributors of COMMUNICATIONS TRANSCEIVERS

HF TRANSCEIVERS

ASTRO - 200 digital solid state 200 W.P.E P. **$1000**

TRIO KENWOOD new model TS-520-S 160 to 10 M, with optional digital readout connected externally. Can be used as a frequency counter self contained separately powered by 12 volt DC. **$700**

TRIO KENWOOD model TS-820S AC only 160 to 10 M with digital readout. **$1,100**

TRIO KENWOOD model TS 820 AC only 160 to 10 M. **$930**

TRIO KENWOOD model MC-50 Microphone. **$ 50**

TRIO KENWOOD model TS-600-A FM-AM. SSB transceiver full 50-54 MHz coverage 10 Watt output variable from 1 Watt to full power. VFO controlled AC-DC operation Styling as TS-700-A. **$700**

TRIO KENWOOD model TR-7400 2 meter FM tranceiver 10 to 25 watts output. Frequency range 144.00 to 147.995 MHz No. of channels 800, Double conversion superheterodine sensitivity better than 0.4 UV for 20 DB. **$440**

ICOM

VHF TRANSCEIVERS SSB

ICOM model IC-202 2 M SSB portable transceiver 144-144.4 MHz **$215**

ICOM model IC-502 6 M SSB portable transceivers 52-53 MHz. **$215**

ICOM IC-22-S synthesized 22 channel 2 M transceiver 10 channel pre programmed. Supplied with 50 extra diodes for the programming. **$269**

ICOM model IC-245 **$450**

ICOM model IC-211 **$750**

YAESU MUSEN model FT-101-E AC-DC transceivers 10 to 160 M with speech processor **$850**

YAESU MUSEN model FT-301. **$960**

YAESU MUSEN model FT 301 - D **$1140**

YAESU MUSEN model FT - 301 - S **$660**

YAESU MUSEN model FL 2100-B Lineal Ampl. **$525**

YAESU MUSEN model FP - 301 **$165**

YAESU MUSEN FR G-7 Uses Wadley loop princ. **$300**

YAESU MUSEN FT221-R 2 meter all mode transceiver. **$628**

FREQUENCY COUNTERS

YAESU MUSEN model YC 500-E-S-J **P.O.A.**

AUSTRALIA'S SOLE DIST. OF KLM PRODUCTS

KLM SOLID STATE POWER AMPLIFIERS

(MHz) 144-148	PA10– 80BL	80	OUTPUT (watts)	
"	PA10–140BL	140	"	
"	PA10–160BL	160	"	
"	PA 2– 70BL	70	"	
400-470	PA10– 70CL	70	"	
	PA 2– 12-B	12 Watts		
	PA 2– 25BL	25 Watts		P.O.A.

MARK MOBILE ANTENNAS

HW 80, 6' long for 80 M. **$ 28**

HW 40, 6' long for 40 M. **$ 25**

HW-20, 6' long for 20 M. **$ 23**

Swivel mounts & chrome plated springs for all **$ 13**

CUSH CRAFT ANTENNAS

A144-11 11 Element 2M-Yagi **$ 50**

A147-11 11 Element 2 M Yagi **$ 50**

A147-20 combination horizontal vertical 2 M **$ 75**

ANTENNA ROTATORS

Model CDR Ham-11 for all hf beams except 40 M **$240**

Model CDR AR-22 L junior rotator for small beams **$ 75**

KEN model KR-400 for all medium size hf beams with internal disc brake **$120**

All models rotators come complete with 230-volt AC indicator-control units.

6-conductor cable for KR-400-500 **65 cents per metre**

COAX CABLE CONNECTORS

PL-259	$1.20
SO-239 Chassi Mount	$1.20
Male to male joiner	$1.20
Female to female joiner	$1.20
Angle connector	$2.00
T-connector	$2.50

COAX CABLE

RG - 8 - U foam filled per metre **$1.20**

SWR METER

Twin meter model: Y.M. - I.E. 3.5 to 145 MHz prof quality **$ 28**

DRAKE TV - 3300 TVI lowpass filter **$ 34**

SSR-1 Receivers **$270**

CRYSTAL FILTER, 9 MHz, similar to FT-200 ones. With carrier crystals. **$ 35**

APOLLO 3 position co-ax switches **$ 15**

All prices quoted are net SYDNEY, N.S.W., on cash-with-order basis, sales tax included in all cases, but subject to changes without prior notice. ALL-RISK INSURANCE from now on free with all orders over $100; small orders add 50c for insurance. Allow for freight, postage or carriage, excess remitted will be refunded.

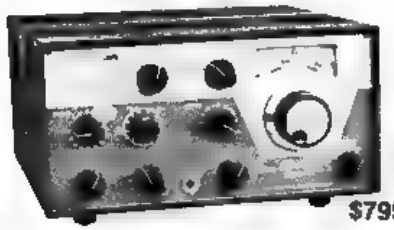
Sideband Electronics Sales

For personal attention: **24 KURRI STREET, LOFTUS** **OPEN ON SATURDAYS TILL 12 NOON**

P.O. BOX 184, SUTHERLAND, 2232 **TELEPHONE: 521-7573**

PETER SCHULZ, VK2ZXL

DRAKE C-Line Amateur Equipment



$795

Drake R-4C

Solid State Linear permeability-tuned VFO with 1 kHz dial divisions. Gear driven dual circular dials. High mechanical, electrical and temperature stability.

Covers ham bands with crystals furnished. Covers all of 80, 40, 20 and 15 meters, and 28.5-29.0 MHz of 10 meters.

Covers 160 meters with accessory crystal. In addition to the ham bands, tunes any fifteen 500 kHz ranges between 1.5 and 30 MHz, 5.0 to 6.0 MHz not recommended. Can be used for MARS, WWV, CB, Marine and Shortwave broadcasts.

Superior selectivity. 2.4 kHz 8-pole filter provided in ssb positions. 6.0 kHz, 6 pole selectivity for a-m. Optional 8-pole filters of .25, .5, 1.5 and 6.0 kHz bandwidths available.

Tunable notch filter attenuates carriers within passband.

Smooth and precise passband tuning.

Transceive capability: may be used to transceive with the T-4X, T-4XB or T-4XC Transmitters. Illuminated dial shows which PTO is in use.

Usb, lsb, a-m and cw on all bands.

Agc with fast attack and two release times for ssb and a-m or fast release for break-in cw. Agc also may be switched off.

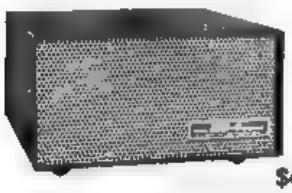
New high efficiency accessory noise blanker that operates in all modes.

Crystal lattice filter in first i-f prevents cross-modulation and desensitization due to strong adjacent channel signals.

Excellent overload and intermodulation characteristics.

25 kHz Calibrator permits working closer to band edges and segments.

Scratch resistant epoxy paint finish.



$47

Drake MS-4

Drake MS-4 Matching Speaker for use with R-4, R-4A, R-4B and R-4C Receivers. (Has space to house AC-3 and AC-4 Power Supplies)

$695

Drake T-4XC

Solid State Linear permeability-tuned VFO with 1 kHz dial divisions. Gear driven dual circular dials. High mechanical, electrical and temperature stability.

Covers ham bands with crystals furnished. Covers all of 80, 40, 20 and 15 meters, and 28.5-29.0 MHz of 10 meters.

Covers 160 meters with accessory crystal. Four 500 kHz ranges in addition to the ham bands plus one fixed-frequency range can be switch-selected from the front panel.

Two 8-pole crystal lattice filters for sideband selection.

Transceives with the R-4, R-4A, R-4B, R-4C and SPR-4 Receivers. Switch on the T-4XC selects frequency control by receiver or transmitter PTO or independently. Illuminated dial shows which PTO is in use.

Usb, lsb, a-m and cw on all bands.

Controlled-carrier modulation for a-m is compatible with ssb linear amplifiers.

Automatic transmit-receive switching. Separate VOX time-delay adjustments for phone and cw. VOX gain is independent of microphone gain.

Choice of VOX or PTT. VOX can be disabled by front panel switch.

Adjustable pi network output.

Transmitting agc prevents flat-topping.

Meter reads relative output or plate current with switch on load control.

Built-in cw sidetone.

Spotting function for easy zero-beating.

Easily adaptable to RTTY, either fsk or afsk.

Compact size; rugged construction. Scratch resistant epoxy paint finish.

High Pass Filters for TV Sets

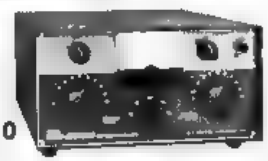
provide more than 40 dB attenuation at 52 MHz and lower. Protect the TV set from amateur transmitters 6-160 meters.

Drake TV-300-HP
For 300 ohm twin lead **$13**

Drake TV-75-HP
For 75 ohm TV coaxial cable, TV type connectors installed **$17**

$165

MN-4 (Model No. 1507)



$310

MN-2000 (Model No. 1509)

Drake MN-4 & MN-2000 Matching Networks

• **Integral Wattmeter** reads forward power in watts and VSWR directly; can be calibrated to read reflected power. • **Matches 50 ohm transmitter output** to coax antenna feedline with VSWR of at least 5:1. • **Covers ham bands** 80 thru 10 meters. • **Switches in or out** with front panel switch. • **Size**: 5½"H, 10¾"W, 8"D (14.0 x 27.3 x 20.3 cm). MN-2000: 14¾"D (36.5 cm). • **Continuous Duty Output**: MN-4: 200 watts. MN-2000: 1000 watts (2000 watts PEP). • **MN-2000 only**: Up to 3 antenna connectors selected by front panel switch.

TVI Filters

Low Pass Filters for Transmitters

have four pi sections for sharp cut-off below channel 2 and to attenuate transmitter harmonics falling in any TV channel and fm band. 52 ohm SO-239 connectors built in.

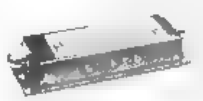
Drake TV-3300-LP

1000 watts max. below 30 MHz. Attenuation better than 80 dB above 41 MHz. Helps TV i-f interference, as well as TV front-end problems. **$32**

Drake TV-5200-LP

200 watts to 52 MHz. Ideal for six meters. For operation below six meters, use TV-3300-LP or TV-42-LP. **$32**

Drake TV-42-LP



is a four section filter designed with 43.2 MHz cut-off and extremely high attenuation in all TV channels for transmitters operating at 30 MHz and lower. Rated 100 watts input.

$19

Prices shown include Tax

Write, 'phone or call for technical information

ELMEASCO Instruments Pty. Ltd.

P.O. Box 30, Concord, N.S.W. 2137
Telephone. 736-2888
Melbourne. P.O. Box 107, Mt. Waverley, Vic. 3149
Telephone 233-4044
Adelaide 42-6666, Brisbane 392 2884
Perth: 25-3144.

1977 REMEMBRANCE DAY CONTEST RESULTS

WINNER — VK1 DIVISION

	a	b	c	d	e
VK1	35	144	1306	15947	111357
VK5	136	561	1975	60287	105739
VK5/VK8	238	807	1880	78778	89638
VK7/VK0	46	251	1469	22179	89623
VK4	170	851	1753	55944	67492
VK3	91	2219	942	27697	13383
VK2	138	2363	875	25914	11751

a—Logs received
b—Licences
c—Average top 8 logs
d—Total points from sections (a), (b), and (c)
e—Trophy score.

In the following detailed scores, the first figures are the points scored and the second are contacts made.

VK1 PHONE

1GB	1521	520	1TH	116	44
1PM	1125	328	1ED	104	26
1KP	1056	310	1ZCB	94	92
1 C	971	344	1VP	93	85
1 CA	913	372	1ZPC	90	83
1 K	823	307	1ZDF	90	83
1FT	746	235	1VW	81	77
1TD	717	202	1EP	59	59
1RH	675	237	1JE	56	14
1TR	660	200	1ZAR	41	39
1QJ	484	153	1DR	27	7
1LF	395	129	1YR	24	24
1NE	395	126	1CR	11	11
1JJ	147	145	1ML	11	11
1JN	124	118	1ZJR	6	6

VK1 CW

1PG	1140	168	1VK	246	30

VK1 OPEN

1AOP	2034	822	1WI	232	135
1AD	779	233			

VK2 PHONE

2BAM	753	417	2NBQ	113	58
2AGF	716	360	2BSG	106	70
2BDT	705	360	2AGS	102	51
2LE	690	403	2BCT	99	56
2AHV	664	340	2ACH	90	52
2BGF	615	345	2AKH	90	57
2BGI	595	395	2NEP	90	41
2NDL	506	290	2ACK	88	45
N	453	273	2BUC	87	52
P	450	248	2SP	85	51
2BGL	377	225	2APU	84	46
2AJF	360	199	2NDP	80	37
2QC	359	170	2SB	79	29
2BDB	343	230	2AQ	78	43
2APP	329	150	2CS	78	40
2BJN	314	154	2NCD	77	45
2ALZ	318	151	2UJ	74	45
2BJN	314	154	2ASH	70	18
2BKE	274	164	2QV	59	43
2BPT	241	131	2BMO	59	18
2BMX	228	110	2JQ	56	42
2ACB	227	128	2AIB	55	54
2PT	220	87	2BJK	53	18
2ABC	214	113	2WW	51	23
2ZX	212	108	2BSB	47	35
2AKO	210	123	2RX	46	21
2EY	202	140	2CU	44	19
2NIP	195	123	2ZSG	44	44
2AJL	194	103	2ACZ	42	16
2PF	168	100	2ASE	42	25
2ACT	162	101	2ZIA	39	39
2AJH	160	75	2AWX	37	37
2WT	158	75	2NFA	36	18
2JS	134	61	2AGZ	34	25
2LF	129	70	2BAD	33	22
2ZVB	129	67	2ZFF	30	30
2AXL	127	75	2BHD	29	13
2NGM	125	84	2ZOK	27	27
2BDN	123	82	2IJ	25	10
2AEC	25	[illegible]	2ASJ	10	7
2MJ	24	18	2AHH	9	9
2BET	23	9	2YJ	8	8
2ZVN	23	23	2AWF	8	8
2NJY	21	17	2YEH	8	8
2CM	19	17	2FD	7	7
2MR	19	17	2NCU	7	6
2BLI	18	18	2YCM	7	7
2NGG	18	13	2OH	6	6
2ZIC	18	16	2AND	6	6
2BUV	14	7	2ZQC	6	6
2NDC	14	5	2AZD	5	5
2NKT	14	5	2NJN	5	5
2NCH	13	9	2ZNW	5	5

VK2 CW

2CX	886	227	2IC	178	41
2DI	754	202	2BBW	122	33
2EL	732	187	2VM	88	25
2OL	580	122	2JY	80	29
2AQF	482	116	2HC	70	20
2XQ	466	112	2ZC	40	10
2IV	320	79	2JM	20	10
2GT	314	87	2RJ	16	7
2WE	186	46			

VK2 OPEN

2BO	1105	565	2HQ	145	59
2OO	1017	415	2VA	113	55
2AOA	559	325	2DO	72	40
2PN	452	169	2AAC	[illegible]	27
2DA	425	156	2HZ	[illegible]	20
2AUX	375	258	2BNW	[illegible]	24
2NAW	282	146	2VR	[illegible]	30
2BLK	240	100			

VK3 PHONE

3HT	1230	754	[illegible]	178	100
3BDL	999	637	[illegible]	175	100
3WF	921	559	[illegible]	172	173
3ANA	842	553	3ZJ	166	60
3AQZ	840	601	3ZYL	163	163
3ADW	794	445	3AOU	158	122
3OT	745	367	3AIE	155	76
3DF	731	546	[illegible]	148	148
3AKK	684	300	3AGH	140	57
3AFE	641	387	3NAC	133	72
3BBS	622	343	3AAW	130	80
3NDK	606	405	[illegible]	123	66
3DS	598	311	3ADP	117	66
3BCK	578	305	3ZI	100	100
3LP	576	292	3OD	94	66
3ANM	570	428	3AOS	77	54
3SM	533	280	[illegible]	76	61
3BIR	504	272	[illegible]	59	40
3ARK	443	240	3BER	53	53
3AYF	392	250	3OG	47	27
3BBH	360	221	3ZPU	46	46
3APZ	348	226	[illegible]	42	20
3XF	340	187	[illegible]	41	41
3ASN	282	136	[illegible]	35	25
3QZ	270	154	3BIT	30	30
3ZTC	255	256	3NCQ	28	10
3ZAO	228	228	3BIS	27	20
3AH	220	127	3AAJ	26	12
3LV	219	107	[illegible]	24	53
3BCC	217	143	[illegible]	12	12
3YQ	211	88	3ZFI	11	11
3BHU	196	201	3ARA	10	6
3WJ	187	115	3ZVI	10	10
3NB	187	709			

VK3 CW

3AYO	618	206	3BDH	252	52
3YK	648	156	3ANJ	148	38
3DG	574	150	3KS	114	30
3FC	516	139	3NAY	114	31
3XB	424	111	3AZT	108	26
3RJ	416	110	3JI	90	23
3VF	338	85	3ABR	90	20
3NK	264	70	3FG	82	23

VK4 PHONE

3WW	820	519	3ASR	262	120
3YF	393	[illegible]	3PR	134	50
[illegible]	331	152	3AYL	120	55
3AMD	[illegible]	107	3NCL	57	34

[illegible]

4YS	1823	749	4BF	111	30
4LP	1513	626	4LK	105	42
3YO/4	1145	418	4GM	103	48
4AVL	1116	456	4OW	102	35
4MW	1107	401	4ABG	102	58
4ADC	1107	548	4TO	95	54
4TE	1070	489	4AET	95	34
4RH	938	256	4LO	93	26
4DO	835	308	[illegible]	92	39
[illegible]	713	304	4AZE	92	32
4ADT	705	302	4NP	91	40
4JP	703	253	4NQ	89	26
4OO	671	250	4EO	88	33
4AEV	654	284	4HW	85	33
4ADA	639	272	4ZLP	78	78
4CI	615	226	4Z G	66	66
4BW	601	256	4EH	61	61
4PF	599	221	4ZX	59	43
4ADM	582	249	4ZCH	55	55
4NDE	539	183	4NDV	54	24
4AAK	515	200	4ZCE	51	51
4ABJ	502	201	4ZGB	51	51
4BQ	479	183	4ZAF	50	50
4RT	445	160	4ZMC	50	50
4AKT	443	212	4NAW	48	12
4EQ	435	168	4ZTV	48	48
4PJ	410	202	4ZGA	46	46
4WIT	387	142	4GS	44	13
4FX	364	129	4IQ	42	40
4YL	358	117	4PL	41	41
4UJ	333	334	4TS	41	20
4NCA	309	122	[illegible]	34	34
4ZIT	292	292	4NAX	33	9
[illegible]	301	100	[illegible]	32	11
4NAJ	281	120	4ZPP	32	32
4AR	278	91	2CZ/4	31	11
4FU	277	100	4LR	31	9
2RP/4	269	85	4NAB	31	13
4NAK	265	110	4ZJR	30	30
4ZBC	263	263	4BZ	28	9
4APG	262	136	4DH	27	27
4VU	260	131	4MU	27	9
4PU	254	78	4TK	27	9
4ZBV	246	246	4NV	26	26
4KD	242	79	4VS	24	24
4OX	236	75	4ZFA	24	24
4CZ	225	65	4ZMD	21	21
4CY	219	78	4ZPF	20	20
4RA	197	62	4EB	18	18
4RZ	197	71	4ZCV	18	18
4ZSH	194	194	4RG	16	16
4ES	189	51	4TL	16	10
[illegible]	170	76	4AF	15	5
4NWD	170	77	4ACM	14	14
4CW	165	57	4XV	13	13
4FN	165	81	4PR	12	6
4AMO	163	67	4ZWB	10	10
4LE	149	45	ZL2TKW/ VK4	10	10
4ZRI	145	47	4HS	9	9
4VV	143	110	4ZBH	9	9
4DY	132	60	4MO	7	7
4ZJM	131	131	4OW	7	7
4YT	130	50	4OM	6	6
4ZHW	123	124	4ZWR	5	5
4ZNI	118	118			
4AL	114	53			

VK4 CW

4XA	1408	253	4XJ	302	55
4KX	1336	222	4PN	292	43
4LV	1018	173	4NJ	110	22
4AXJ	404	69	4HH	30	5
4FJ	326	52	4NTW	30	6
4CJ	312	55	4CN	20	7
4ARL	272	50			

VK4 OPEN

4II	2270	668
4HE	2160	681
4UX	1343	411
4DT	1268	583
4LT	1260	326
4AAR	1116	486
4YG	1101	381
4AGP	948	301
4RF	906	300
4WL	830	165
4XY	788	210
4UG	402	141
4UC	485	133
4AK	366	81
4LZ	329	119
4LG	308	95
4NAE	296	139
4JH	286	63
4QF	280	103
4SO	274	89
4HX	242	150
4ABS	164	61
4NB	150	59
4OK	92	35
4RO	69	53
4PV	59	41
check log		
4ABD		

VK5 PHONE

5QX	1807	829
5AAA	1655	666
5BI	1640	668
5GY	1259	535
5MM	1066	460
5NJ	963	401
[illegible]	958	381
5MS	956	404
5CHL	939	514
5ZK	908	435
5PE	877	421
5FD	874	345
5LP	866	347
5DV	858	428
5NX	836	367
5ZH	790	345
5TY	768	374
5QV	746	282
5LN	692	300
5SH	671	317
5VT	664	318
5LM	608	236
5KR	512	339
5US	512	248
5GL	509	344
5JQ	485	311
[illegible]	476	232
5VE	468	178
[illegible]	451	200
5ZE	454	241
[illegible]	450	213
[illegible]	446	205
5EJ	436	189
[illegible]	417	246
5NI	405	210
5QS	405	308
5KG	404	300
5NN	380	160
5ST	369	151
[illegible]I	361	364
5RV	355	144
5NXP	341	192
5WR	326	137
5JD	327	150
5ZVQ	324	325
5GP	319	149
5ZWR	316	316
5SG	311	146
5ZT	308	150
5ZJQ	308	308
5ACE	302	286
5DI	299	100
5NF	292	120
5NBC	288	109
5SS	283	100
5RX	282	118
5NPN	279	137
5IT	265	100
5NZ	264	111
5LL	263	113
5ZB	259	103
5ZU	253	85
[illegible]	248	130
5DK	247	109
5CY	237	90
5ZJB	[illegible]	235
5BW	233	103
5NRF	227	105
5CH	225	82
5ZBU	222	222
5GZ	216	92
5VV	213	99
5ZSA	210	210
5ZMH	208	208
5HN	196	95
5FL	193	65
5LQ	191	62
5BG	186	70
5NJP	186	94
5ZRA	179	179
5GW	176	81
5EF	174	60
5CW	172	65
5ZAR	172	172
5RR	168	82
5NLS	[illegible]	84
5RY	167	72
[illegible]	166	62
[illegible]	164	73
5NAC	[illegible]	74
5ZQ	161	100
[illegible]	154	60
5LC	151	61
5ZAT	150	150
5ZIC	148	148
[illegible]	148	148
5SE	147	89
5ZLH	[illegible]	146
5NWG	143	84
5ZHS	134	134
[illegible]	[illegible]	103
[illegible]	129	45
[illegible]	127	128
5ZBC	125	125
5NGD	124	47
5ARC	121	121
5OC	119	80
5CL	117	71
5NTM	116	58
5NUV	115	60
5ZJP	110	110
5ZNN	110	110
5QF	107	50
[illegible]	106	106
5WC	105	47
5EO	102	41
5ZBM	102	102
5ZAJ	101	101
5ZKK	100	100
5ZTG	99	100
5QH	97	43
5TF	97	40
5DH	96	42
5RI	94	33
5RJ	93	34
5 M	92	91
5YY	89	30
5ZAC	89	89
5ZGB	88	88
[illegible]	87	29
5XU	87	30
5KH	86	30
5TW	79	32
5ZSB	78	78
5WH	74	30
5DJ	70	30
5DF	67	22
5OF	66	66
5EP	63	30
5TH	62	33
5AC	61	20
5GM	61	26
5ZME	61	61
5TU	60	60
5N C	60	29
5EV	53	20
5LT	51	33
5NBW	49	31
5WN	49	31
5WN	48	30
5YN	48	16
5ZR	48	16
5ZFJ	48	48
5CA	46	20
5GU	[illegible]	44
[illegible]	43	14
5LK	42	22
5ZRF	40	40
5UA	37	36
5HW	36	12
5AG	36	12
5GJ	34	15
5PB	34	17
5ZBY	34	34
5ZBW	31	31
5ZBE	27	27
5ZIS	26	26
5ZPP	22	22
5ZAY	18	18
5CJ	16	8
5CX	16	16
5NY	13	13
5ZNJ	13	13
5IX	11	11
5ZPD	9	9
5KT	6	6

[illegible]

5KL	1100	210
5OR	978	188
5LI	838	163
5UM	670	150
5BN	492	100
5AU	310	54
5QQ	282	60
5MV	272	53
5SW	264	47
5NLC	230	51
5IU	224	50
5HO	220	40
5NBB	202	46
5KU	174	30
5KI	166	32
5HR	154	29
5QR	144	30
5LU	116	25
5KY	76	14
5TL	40	13
5UE	34	6

VK5 OPEN

5EN	1620	645
5WV	1067	450
5IF	909	309
5MY	786	277
5QI	781	212
5FM	681	180
5CV	470	115
5PK	432	146
5ZSD	391	363
5RG	388	98
5RC	378	76
5ZCF	367	355
[illegible]	310	92
5TQ	282	124
[illegible]	253	74
5ZF	223	88
5IP	196	70
[illegible]	127	72
5OT	67	22
5NLF	47	25
[illegible]	37	31
[illegible]	24	20
5EU	23	14

VK6 PHONE

6AS	2531	700
6OR	1963	560
6TV	1758	520
6LK	1657	480
6BV	1403	401
6JP	1363	404
6HA	1327	564
6DA	1266	507
6KW	846	284
6KD	818	238
6VP	810	229
6LV	701	212
6DV	592	214
6NAY	579	203
6ST	539	168
6AN	521	271
6VW	501	177
6WL	478	130
6IW	455	260
6AO	451	141
6FS	451	128
6XD	400	220
6DC	394	109
6SH	391	215
6NER/6	387	117
6DY	382	133
[illegible]	363	102
6HU	343	243
6KC	342	87
6DH	339	101
6TP	334	243
6NAO	327	114
6NBZ	325	106
6RV	316	98
6WD	296	101
[illegible]	281	80
6ZDE	281	283
[illegible]	244	76
6EB	219	104
6BT	213	65
6JY	187	90
6DZ	182	59
[illegible]	180	157
6NC	170	51
[illegible]	168	60
6TX	166	48
[illegible]	166	169

[illegible]

6NBB	165	67
6CU	163	158
6ZGG	154	154
6CB	150	104
6NBK	147	[illegible]
6NAN	145	56
6ZHM	139	[illegible]
6SB	136	[illegible]
6FM	129	34
6NAM	116	[illegible]
6NE	112	[illegible]
6ZDN	111	111
6GL	103	32
6AV	102	32
6QR	100	28
6XY	99	35
6TK	97	25
6WG	87	28
6LD	86	22
6ZFU	86	87
6ZEX	85	85
6RL	84	24
6NAF	78	41
6NAR	77	32
6ZKY	74	74
[illegible]	73	22
6AU	70	70
6FB	69	34
6JH	67	20
6SR	67	27
[illegible]	65	23
6EQ	57	17
6MM	57	58
6ZBB	56	56
6CN	52	53
6NAZ	51	24
6NAC	[illegible]	12
6NS	36	25
6ZCU	34	34
6ML	[illegible]	30
6AT	29	9
6BY	28	18
6RO	25	6
[illegible]	20	6
[illegible]	19	19
6JA	17	9
6ZKV	17	17
6LM	8	8

[illegible]

6WT	1302	173
6AQ	1254	164
6HQ	1252	255
6VK	1126	149
6RS	822	112
6AJ	818	114
6JF	706	100
6SM	550	73
6RM	230	32
6FI	94	12

VK6 OPEN

6MA	2048	537
6HK	1869	508
6ED	1661	350
6RU	1516	372
6YL	1509	630
6JX	1331	450
6QI	1200	338
6CW	1132	420
6IC	986	444
6BD	860	263
6PH	724	206
6ZZ	621	157
6BE	609	115
6KK	585	166
6KR	367	101
6GA	357	54
6NAG	353	106
6EG	240	50
6RH	231	161
6LP	224	42
6JK	218	78
6NK	211	41
6CR	160	126
6KY	142	115
6LJ	136	88
6WI	127	109
6WX	116	43
6AM	75	21
6EE	73	62
6FH	61	45
6GS	61	13
6PD	44	34
6IQ	34	17

VK7 PHONE

7HL	1431	509
7KZ	1142	447
7HK	993	341
7MX	984	392
7KH	787	260
7GW	775	262
7NOW	772	317
7WI	691	287
7SF	676	250
7JU	447	155
7DK	427	126
7SG	398	134
7EB	339	125
7TT	326	131
7BM	267	100
7KK	179	67
7LS	151	63
7MK	135	[illegible]
7JO	131	[illegible]
7QF	130	[illegible]
7PH	85	35
7ZIE	81	85
7ZGF	62	62
7NFR	59	27
7HB	56	20
7ZKC	47	47
7AB	46	17
7JD	38	13
7IL	32	8
7TL	20	7
7ZAA	18	16
7AX	5	5

VK7 CW

7RO	1194	209
7CH	1106	180
7HE	944	170
7JB	520	81
7RY	476	88
7ZO	162	29
ZGV	24	5

VK7 OPEN

7AZ	2224	636
7ZZ	307	49
7AL	299	65
7PF	273	100
7LZ	143	36

VK8 PHONE

8FB	2437	629
8JD	2123	603
8ZB	1201	336
8DI	1175	290
8CO	859	251
8CC	564	143
8CW	869	178
8NTA	272	[illegible]
8NRD	59	
8ZTW	58	58
8ZTS	42	42
8ZBD	12	12

VK8 CW

8RR	1188	152
8HA	1016	125
8SU	900	110

VK8 OPEN

8NT	1265	368
8NT	916	152
2BSJ/MM8	35	15

VK9 OPEN

0CC	1558	208
0AC	1212	110

P29 PHONE

9DM	1649	400
9GA	382	96

P29 OPEN

9EJ	863	137
9NRP		
check log		

ZL PHONE

1AGO	144	43	4MG	617	212
1AUH	82	25	4OP	143	43
3TX	122	40	4CT	36	12

ZL CW

2MM	664	106	4HA	1226	206

ZL OPEN

1GQ	1977	438	4BE	854	228
1ACL	1038	301	4IJ	565	176
1BQD	650	196			

RECEIVING OPEN

VK2	G. Schofield	667	308
	P. Anslow DXL2-PMA	346	201
	I. Theodore DXL-NTI	292	176
	J. Watson	242	117
	R. Browne DXL2-BEQ	204	116
	C. Maxworthy DXL2-NDX	120	60
	P. Hannelly DXL2-PCH	36	18
	N. Stollznow DZL2-MUD	11	6
VK3	E. W. Trebilcock L30042	572	166
	M. J. Stephenson L30848	647	393
	E. A. Phillips L30847	302	195
VK4	B. G. Roche ORS 38670	656	251
VK5	R. Whitford	1693	725
	A. D. Drexel	358	145
	R. G. Edmeades L50122	342	159
	R. Warrington	257	252
	J. Warrington (Mrs.)	253	254
	D. Warrington	100	100
VK6	F. H. Price L60030	1219	333
	J. D. Smith L60276	625	105
	J. Byrne	298	101
	R. D. Boyd L60138	170	85
	D. Smedley L60101	35	35
VK7	G. Mutton	555	205
P29	K. S. Viney	1517	318

CONTESTS

Kevin Phillips, VK3AUQ
Box 67, East Melbourne, 3002

The results of last year's Contest which were published in January AR showed 30 logs submitted by Australian participants.

In recent international CW contests, many unfamiliar firsts from VK1, VK4 and VK6 have been heard making a great impact on the DX fraternity. These operators would find the Commonwealth (BERU) a very rewarding activity. The scoring system is a good one — chasing bonus points apart from contact points is a great interest in itself as well as a key also to success. 10 and 15 metres are still on the improve and will be the bonus bands.

Publicity for BERU has been promised in "Break In" so there should be plenty of ZLs about as a result.

Time: 1200 GMT Saturday 11th March, to 1200 GMT Sunday 12th March.
Mode: CW only 3.5 to 28 MHz. Call is CQ BERU.

Eligible entrants are radio amateurs licensed to operate in British Commonwealth call areas. In our region, Lord Howe VK2, Willis VK4, Christmas VK9, Cocos VK9, Norfolk VK9, Heard VK0, Macquarie VK0, and Australian Antarctica, as well as VK1-8, are all separate contest areas.

Two trophies have been presented for competition between VK stations — a silver medallion for the highest VK scorer in the official RSGB results and a bronze medallion for a middle placed VK scorer based on total VK entries divided by two, that is for 34 entries, to 17th placing, for 53 entries, to 27th placing. Last year's trophy winners were VK5NO and VK7JB.

SCORING: 5 points for contest exchange, plus 20 bonus points for 1st, 2nd and 3rd contact with each call area other than one's own (there are 111 in all, with G, GW, GM etc., counting as a single area) — exotic prefixes, A2, C6, 8P, 9L, etc., are the rule rather than the exception.

LOGS: Separate logs are required for each band showing columns — 1. Date and time GMT; 2. Station worked; 3. NR sent; 4. NR received; 5. Band; 6. Leave blank; 7. Contact points claimed; 8. Bonus points.

Each band log should be separately totalled and should include, at the end, a check list of areas worked on the band. Separate band totals should be added together and the total claimed score entered on a cover sheet, giving particulars of station, QTH, equipment, power, and a declaration that the rules and spirit of the contest have been observed.

Entries may be single or multi-band. Single band entries should claim entries on one band only, but submit details of contacts on other bands for checking only. Entries should be addressed to

D. J. Andrews G3MXJ,
18 Downsview Crescent, Uckfield,
East Sussex, England TN22 1UB.

Closing date: 15th May 1978 (by airmail, please). ■

BOOK REVIEW

RADIO AMATEURS' EXAMINATION QUESTIONS AND ANSWERS —

Compiled by the RSGB Education Committee

This book contains a set of typical questions and model answers. The questions are from past UK amateur examinations.

The standard and scope of the questions and answers are similar to the local requirements with the exception of the Regulations section.

The answers are well laid out and provide a good idea of the standard required and cover the likely topics well.

Taken with other material this book should be useful both to those instructing classes and to students. Whilst not exactly the same as the local questions there is a great deal of common ground and the contents provides a very useful guide and would be a worthwhile book.

It should be available from booksellers and WIA Magpubs shortly and is recommended.

Dick Smith's Australian CB Radio Handbook. Price $3.95.

On first receipt of this book, one was a little dubious right from the start regarding the contents.

I admit that I first read it in private where no other amateur could see me for fear of castigation and being called a traitor.

From an amateur's point of view the book tells you nothing new, but for a prospective CBer there is a complete resume of the whole CB system in Australia, and this is the primary object of the book anyway.

An information packed non-technical 128 page handbook published by Horwitz and contains answers to the questions on CB likely to be asked.

The book elaborates on: What CB is all about. Types of rigs. What to watch for when buying a rig. Licencing requirements. Australian system and U.S. system. Accessories available. Jargon, codes, data, etc. NCRA, CREST, emergency use, CB clubs. Glossary of technical and CB terms.

There is even an excellent information page on amateur radio.

With so much confusion and debate on CB at the present time, the book has made an excellent inroad to the Australian scene, and to my knowledge is the only CB book that does so. All other books on CB are related to the American system.

The only criticism one could level is the use and encouragement of the 10 code, and the proliferation of the jargon, but I guess that is something we have to live with.

To the new CBer (and who possibly may upgrade to amateur radio), I recommend this book for serious consideration.

The book is available from all Dick Smith stores and dealers, and shortly through newsagents and other CB specialist stores.

VK3UV

LARA

Ladies Amateur Radio Association

February again, and "Season's Greetings" to those who are doing exams this month, especially those YLs who are attempting either AOLCP or telegraphy (otherwise known as the P&T hurdles).

Contrary to former advertising (see January AR) this article is not about a well-known YL operator. Instead we announce the results of the VK3 LARA AGM and introduce a YL who is about to become well known, as our new State President of LARA, Heather Bedson YF/3ZEB. Heather is one of the longest-standing members of LARA in VK3 but may not be well-known outside Victoria as she doesn't yet have a licence. She has come up on air on OM Ray's call, and they work as a team to handle the paper-work of contests, such as the RD Contest. Heather is hoping to start working for a licence of her own soon. As minutes secretary over the previous months in LARA, she has done such a superb job that all previous minute-takers have been put to shame, so best wishes to Heather as she takes on the job as President.

Our new Vice-President is a well-known (if only recently licensed) YL, Mavis VK3BIR. Norma VK3AYL continues as the excessively hard-working Newsletter Producer and general correspondence handler and Heather VK3NFY is carrying on as Treasurer. Listeners to WIA Broadcast in VK3 will also hear Heather's notes on Sunday mornings as she has very kindly offered to take over that part of the publicity job from me.

On the national scene, the first edition of the newsletter for this year is in production and should be out soon/eventually (strike out which does not apply). The novice sked plans are proceeding and Tuesday has been suggested as a suitable evening for this net. Suggestions from intending participants should be directed to Mavis VK3BIR where they will be warmly welcomed.

Speaking of warm welcomes, these are extended to any YL who wishes to join our growing organisation. Writing to either Norma VK3AYL or to LARA care of the WIA in Victoria (or to your own State LARA Co-ordinator) will result in somebody getting in touch fairly soon.

33's — Kate Duncan. ■

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Commercial advertising is excluded. Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book.

FOR SALE

Alpha 374 self-contained desk top bandpass linear PA, 3-30 MHz, no tune up, instant band change, or manual tune position, uses three Eimac 8874 ceramic triodes, carrier output in excess of 1900W, continuous, duty, brand new, in factory sealed carton, $1850. James Goodger VK2JO. Ph. (02) 38 2981.

Motor Generator, Air Ministry power unit type 34 (type 30). Nominal I/P 9.3V DC, O/P (1) 220V DC at 0.11A; (2) 7.2V DC at 13A. Can be run at 12V DC input for about 250V DC out at higher than nominal output current. Almost new, in case, complete with filters, relay, etc., $10. VK3BBK, QTHR. Ph. (03) 570 7894 A.H.

Drake R-4C Rx, serial No. 19190, current model, as new condition, absolutely no scratches or marks, complete with extra 160m and 10m xtls, passband tuning, notch filter, double xtl filter system, etc. Used rarely for occasional listening, never part of active station. With original packing, manual, etc., $525 cash. Ian Cousins VK5IK. Ph. Eudunda 252.

Heathkit SB620 panadapter/spectrum analyser with handbook. IF range 455 kHz to 6 MHz, $50. R. Graham VK2BQJ, QTHR. Ph. (02) 642 0122.

Eico Tri-Band SSB/AM/CW Transceiver, 80-40-20. Model 753 with heavy duty power supply, mike, all handbooks and circuits, $270. VK3ATP, QTHR. Ph. (03) 25 6022.

"Electronics Australia" magazines from 1969 to 1973 approx., plus other miscellaneous electronic magazines and books, $10 the lot. Ph. (03) 89 4853 A.H.

Yaesu Receiver FRG7, less than 1 hour use, $280; Hy Gain Antenna, vertical self supporting 10-80m, tower section 25 ft., total height 50ft., brand new, original packing, will deliver Melb. suburbs, $250; Yaesu Transceiver FT2FB, xtals, 6 channels, as new ex deceased estate, $200. VK3SS, QTHR. Ph. (051) 47 2265.

Toroids as on p581 of 1977 ARRL handbook; take legal power 3-30 MHz, $7.55 ea. plus p&p 40c for one, 60c for two. VK3AGF, QTHR. Ph. (03) 379 6524.

Kenwood TV506 6m Transverter, for use with TS520, new condition, complete, including built-in AC power supply and original packing, $185.00. VK3KK, QTHR. Ph. (03) 469 4200 AH, (03) 652 6110 bus.

Kenwood QR-666 Comm. Rx, excellent condx, very stable freq. control, ideal sind-by Rx, owner upgrading, as new condx, $150 ONO. Terry VK2ALG, QTHR. Ph. (060) 21 3288 or (060) 25 3292 AH.

ICOM IC202 2m SSB, very little use, $150. S. Ward VK2SW, QTHR. Ph. (069) 21 2125 bus, (069) 22 6082 AH.

Rotator Cornell-Dubilier Ham II with 240V AC, control box, complete with 100 ft. of Belden rotator cable, in use 6 months, excellent condition, complete with owners manual, $200; Hy-Gain 204BA 4 el. 14 MHz yagi with Hy-Gain BN-86 matching balun and 100 ft. RG8U low loss American cable, $225. VK2JO. Ph. (02) 36 7756.

FTDX401 with matching speaker, CW filter. VK2AAC, QTHR. Ph. (02) 521 7060.

Kenwood TS-520 AC/DC Transceiver, fitted CW filter and external VFO-520, a very good rig by performance, complete with connecting cables, handbook and spare set of tubes, $575 or near offer. VK2BFJ, QTHR. Ph. (043) 32 5756 any time.

Yaesu FT100B Transceiver, good condition, complete with helicals for 80, 40 and 20m, $385; Circuit and parts for 200W linear, $75. VK3AHG, QTHR. Ph. (03) 288 2024.

QM70 28/144 SSB Transverter, never used, $100; Kyokuto 144 MHz Tcvr, FM with power supply and amplifier 25W with 2N5591I, new, never been used, together with 28 el. yagi beam and ringo antenna, $400; SSTV monitor and camera (two lenses), built on Robot Boards, wants lining up, together with a heavy duty 22V÷0 22— Power Supply together with all circuits etc. $450 or will consider offer. VK4AGO, QTHR. Ph. (071) 72401.

Novice Yaesu FT301S-FP301, new, owner must sell, 25W PEP output, sealed carton, $780. VK7NAS, 3 Denman Rd., Trevallyn, Launceston, 7250. Ph. (003) 44 4172.

Estate late VK3NY: AR7 Rx with handbook, six coil boxes and sundry spare units, $60 ONO; Type 3 Mk 2 Trans/Rec, 80-40-20m, 25W CW, 10W AM, xtal cont, 250V AC, 6V DC, handbook, $40 ONO; TU-6B Tuning Unit, 3-4.5 MHz, two Var Cond (wide spaced), 15-15 and 19-116 pF, vernier dial, ceramic switch, etc.; Type 'S' Power Supply; Indicator Unit, Type A1, incl. 5" CRT; Class 'C' Wavemeter; two BC966A Units; BC442A Ant Relay Unit, meter, etc.; Handbook for AT5/AR6; Valves: 902 1" CRT, RL16s, 9001, 9002, 807s, etc.; xtals: 1220, 326, 4010, 7025, 7155 kHz, two channel 45 (24.5 MHz). Offers to VK3RN, QTHR. Ph. (03) 25 5315 AH.

Coax Cable, 0.875 inch diameter, cellflex CU2Y, has tubular copper inner, high density foam type dielectric, solid ridged copper outer conductor with black plastic sheath; $2 per yard. R. Mudie VK2ZRQ. Ph. (02) 663 0171, 8 am to 4 pm weekdays only.

Kenwood TR-7200G, 10W, 2m FM repeaters 1 to 8, Simplex 40, 50, 51, as new, $180. VK2AMT, QTHR. Ph. (02) 451 4902.

Barlow Wadley Rx, slight fault, $155 plus freight. D. Deerman, 222 Parry St., Charleville, 4470.

Tower 60ft, self-supporting triangular 8 ft. sides at bottom 4 ft. top, 2 sections, strongly constructed, $60. VK3AXA, QTHR. Ph. (059) 42 7248.

SILENT KEYS

It is with deep regret that we record the passing of —

Mr. L. C. C. GALBRAITH VK2ABD

Johnson Matchbox Antenna Tuning Unit, very good condition, Midland SWR dual meters, also homebrew dummy load, compact, heavy duty, lot $100. Maurice Glover VK7MG, 17 Mona St., Battery Point, Tasmania 7000. Ph. (002) 34 3691.

Uniden 2020, matching speaker and remote VFO, first class condx, in original carton, $775. VK3TG, QTHR. Ph. (058) 52 1636.

SSTV Fast/Slow Digital Scan Converter, W6MXV design, full, half, quarter frame, video invert, and grey scale generator, $200. Stan VK3BHZ, QTHR. Ph. (03) 870 5132, bus. (060) 71 6211.

Ken KP202, hand-held FM transceiver with nicads, charger Chs. 40, 50, rpts. 2, 4, 6, 8 and stubby helical, good condx, $145 ONO. Neil Osborne VK3YEI, QTHR. Ph. (03) 763 5207.

SSTV W0LMD Keyboard PCB, complete and working (CQ Sept. '74), $95; 17" picture tube, brand new, P7 phosphor (for SSTV), $25; Kenwood TR7200 2m FM, Ch. 40, 50, 61, V, R42, 44, 46, 48, $200. VK3AHB (QTHR VK4MM). Ph. (03) 630 72[illegible] bus.

Teletypes 16SR, working order, $55, with adjustment instruction, spare parts available; 240/110V Transformers 150VA, $20. VK4AFB. Ph. (07) 356 1393.

Drake R4-B Rx, all xtls, 1.8 to 30 MHz, plus HF broadcast, excellent condition, $400. VK5RG, QTHR. Ph. (08) 276 4547.

Novice Revision Text, a text of 1000 revision choice questions with answers for the novice candidate covering theory and regulations, $3.00 posted. D. Wilson VK2ZCA/NMW, 63 Superior Ave., Seven Hills, 2147.

WANTED

VOM Heathkit Model IM-25 with ohm, DC, DC zero centre, RMS AC scales, for associate member studying electronics. Details to A. A. Paton, Box 868, G.P.O. Albany, W.A.

IC60 6m FM Transceiver. Anybody knowing the whereabouts of such a transceiver belonging to Mike Goode VK3BDL, could contact him please on Ph. (03) 99 1606 after 6.30 p.m. any evening.

Uniden 8010, remote VFO, complete with connecting cable. Advise condx and price. Terry VK2ALG, QTHR. Ph. (060) 21 3288 or (060) 25 3292 AH.

Pensioner studying for AOCP needs Rx 240V commercially made unit covering HF amateur bands only preferred. Age no bar, but should have BFO and be in working order, to $100. John Weir, 100 Wrigley St., Maroochydore, Qld. 4558. Ph. (071) 43 3923.

FT101S in good condition, reasonable price VK3AHG, QTHR. Ph. (03) 288 2024.

Radio Sets Nos. 19, 11, 31, 88, also require original accessories and power supplies, for collection. Please write or phone A. D. Johnson, 25 Verney Rd., Shepparton, 3630. Ph. (058) 21 2309 with particulars and anticipated costs.

FP200 Power Supply, cheap Triband beam. VK3AHB (QTHR VK4MM). Ph. (03) 630 7269 bus.

Xtal (1 MHz) for BC221-AK freq meter, in good order. VK2BET, QTHR. Ph. (02) 476 2933.

Needles, unused HMV "silent stylus" or "Columbia 99", to suit type 14 pick-up. VK2ZSV, QTHR.

TUITION

Morse Students. Morse cassette copying service now available. Send your C60 tape with two 18 cents stamps (service fee) plus return postage. Specify speed 4, 5, 6, 8, 10, 12 wpm. F. Santos VK2ZOU YRS Tapes Officer, 8 Cooper St., Blacktown, 2148.

Novice Theory/Regs and/or Morse Course. The Hornsby and Districts Amateur Radio Club are running this for the prospective novice or the current Limited Licensee. For more details, contact Barry White VK2AAB, on Ph. (02) 487 1428 AH.

YAESU and BAIL

the names you look for in advanced amateur communication equipment.

Would you buy a "Rolls" at your Supermarket?

. . . then why buy your first class radio equipment that way?

Bail Electronic Services have been the Australian factory representatives and specialists in Yaesu amateur communication equipment since 1963.

Our years of handling and specializing in this equipment have enabled us to build up a fund of knowledge and technical experience, backed by a comprehensive range of spare parts and service facilities. We don't just sell a set, our concern extends throughout the life of your equipment.

A selection of the top lines from Yaesu and Bail

FT-277R. Latest in VHF FM, just released 800 ch 2M band FT-277R with memory. Dig. readout, unique optical band change eliminates troublesome switch controls. ± rptr facility, etc.

$375.

The ever-popular FT-101E Transceiver: 160-10 Mx SSB AM CW PA two x 6JS6C 260W PEP input SSB Built-in Dual AC/DC power supply.
BUILT-IN RF SPEECH PROCESSOR. Solid state except for Tx. PA and driver. IF noise blanker, FET RxRF amplifier, clarifier, built-in speaker. Export Mod 240V AC 12V DC.

$849.

FT7 — The all solid state FT7 20w, 12V mobile tcvr provides high performance on the 80-10m bands. Compact and lightweight, it supersedes the successful FT75B and includes built-in VFO, provision for CC operation, single knob tuning, NB, plus many more desirable features. Ideal for novice and O.T.

$578.

FT901DM, the ham's dream, a deluxe 160-10m Tcvr with a host of new unusual features placing it far ahead of other sets. P.A.2x61468. Dig. and analogue readout, Freq. memory, electronic keyer, AC/DC operation, RF speech processor, variable I.F. band width, special circuitry to reduce spurious and harmonic emissions, etc!

$1575

Contact us for details of other Yaesu equipment plus the accessories required to complete your station.
All equipment from Bail's carries a 90-day warranty and complete service back-up.

JAS 7778-35

ELECTRONIC SERVICES

FRED BAIL VK3YS
JIM BAIL VK3ABA

60 Shannon St., Box Hill North, Vic., 3129. Ph. (03) 89 2213

Yaesu agents in Australia since 1963

Radio amateur equipment from B.E.S. also sold by —

W.A.	Radio Communication Services, H. R. PRIDE, 26 Lockhart St., Como, 6152	Ph. 450 4379
	WILLIS TRADING CO., 429 Murray Street, Perth 6000	Ph. 21 7609
S.A.	FARMERS RADIO PTY. LTD., 20 Stanley St., Plympton 5038	Ph. 293 2155
TAS.	G. T. ELECTRONICS, 131 Westbury Rd., South Launceston 7200	Ph. 44 4773
	PRINS RADIO, 123 Argyle Street, Hobart 7000	Ph. 34 6912
N.S.W.	Aviation Tooling, STEPHEN KUHL, 104 Robey St., Mascot 2020	Ph. 667 1650
	Amateur & Novice Comm. Supplies, W. E. BRODIE, 23 Dalray Street, Seven Hills 2147	Ph. 624 2691
	DIGITRONICS, 186 Parry St., Newcastle West 2302	Ph. 69 2040
	RIVERCOM, Sid Ward, 9 Copland St., Wagga Wagga 2650	Ph. 21 2125
QLD.	H. C. BARLOW, 92 Charles St., Aitkenvale, Townsville 4814	Ph. 79 8179
	MITCHELL RADIO CO., 59 Albion Rd., Albion 4010	Ph. 57 6830
A.C.T.	QUICKTRONIC, Jim Bland, Shop 11, Altree Crt., Phillip 2606	Ph. 81 2824, 82 2864

Big news from BAIL in VHF and UHF Transceivers . . .

FT-221R 2M All Mode Transceiver.
Here is a compact, versatile transceiver designed for the active 2 meter enthusiast. The FT-221R features all mode operation — SSB/FM/CW/AM — with repeater offset capability. Advanced phase lock loop circuitry offers unsurpassed stability and clean spurious-free signals. Modular, computer-type construction offers reliability and ease of service. Pre-set pass band tuning provides the optimum selectivity and performance needed on today's active 2 meter band. Join the fun on FM, DX, or OSCAR, with the FT-221R transceiver. Another winner from the world's leader in amateur communications equipment. **$659** (**$749** with Dig. Readout Adaptor, a few only available).

FT-277R. Latest in VHF FM, just released — 800 ch 2M band FT-277R with memory, Dig. readout, unique optical band change eliminates troublesome switch controls. + rptr facility, etc. **$375.**

SPECIAL

FT-223 2M F.M. Transceiver.
10W 23 channels, plus one "priority" channel. Inc. mic., 12 V power cable, desk stand, mobile mounting bracket and crystals for channels 40, 50 and 51 installed. Limited quantity at never-to-be-repeated price of **$159** each. A real bargain!

FT-620B 6M Mobile/Base Station Transceiver.
10W solid state, AC-DC operation. The Ft-620B lets you join the action in DX on 6M. Don't miss these SSB, AM CW sets at **$399** while shipment lasts.

MODEL SR-C430, 10W, 12 channel plus memory channel, Mobile FM 12V DC Transceiver for 420-450 MHz Amateur Band use. A superb compact unit. Complete with microphone, built-in speaker, snap-clip mobile mount, power cable, DC line filter, stand for base station use. Including one channel. Price **$342**.

SR-C146A, 2m FM 2W output, 5 chan. hand-held transceiver. This superior quality transceiver comes complete with a leather carrying case, and auxiliary jacks are provided for optional external microphone, earphone, antenna and battery charger. Includes built-in mic. and speaker. Whip antenna telescopes down level with top of set. Price **$248** incl. 3 channels.

SR-C432, 2.2W, 6 channel hand-held FM transceiver, with short helical flexible antenna, leather case and one channel installed. Superior construction and performance. Jacks provided for external mic., earphone, antenna, and battery charger. Includes built-in mic. and speaker. **$285**.

All prices include sales tax. Freight is extra. Prices and specifications subject to change without notice. Allow 50¢ per $100 for insurance when freight required.

Write for brochures containing comprehensive data on this equipment. Bail — quality equipment and sound service backup.

JAS 7778-36

ELECTRONIC SERVICES

FRED BAIL VK3YS
JIM BAIL VK3ABA

60 Shannon St., Box Hill North, Vic., 3129. Ph. (03) 89 2213

Yaesu agents in Australia since 1963

Radio amateur equipment from B.E.S. also sold by —

W.A.	Radio Communication Services, H. R. PRIDE, 26 Lockhart St., Como, 6152	Ph. 450 4379
	WILLIS TRADING CO., 429 Murray Street, Perth 6000	Ph. 21 7609
S.A.	FARMERS RADIO PTY. LTD., 20 Stanley St., Plympton 5038	Ph. 293 2155
TAS.	G. T. ELECTRONICS, 131 Westbury Rd., South Launceston 7200	Ph. 44 4773
	PRINS RADIO, 123 Argyle Street, Hobart 7000	Ph. 34 6912
N.S.W.	Aviation Tooling, STEPHEN KUHL, 104 Robey St., Mascot 2020	Ph. 667 1650
	Amateur & Novice Comm. Supplies, W. E. BRODIE, 23 Dalray Street, Seven Hills 2147	Ph. 624 2691
	DIGITRONICS, 186 Parry St., Newcastle West 2302	Ph. 69 2040
	RIVERCOM, Sid Ward, 9 Copland St., Wagga Wagga 2650	Ph. 21 2125
QLD.	H. C. BARLOW, 92 Charles St., Aitkenvale, Townsville 4814	Ph. 79 8179
	MITCHELL RADIO CO., 59 Albion Rd., Albion 4010	Ph. 57 6830
A.C.T.	QUICKTRONIC, Jim Bland, Shop 11, Altree Crt., Phillip 2606	Ph. 81 2824 82 2864